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PURĀTATTVA

BULLETIN OF THE INDIAN ARCHAEOLOGICAL SOCIETY

No. 5 1971-72

EDITOR
S. P. GUPTA

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Bulletin of the Indian Archaeological Society

No. 5 & 6 1971-72

PROCEEDINGS OF THE SEMINAR ON OCP & NBP

EDITOR

S. P. GUPTA

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Editorial

No. 5 of the Bulletin is before you. It has been devoted primarily to the proceedings of the Seminar on OCP and NBP convened by Shri K. N. Dikshit and held in May 1971 in the National Museum, New Delhi. Although the first draft was prepared by me, I, due to my heavy preoccupation with the printing of my book *Disposal of the Dead and Physical Types in Ancient India*, was unable to revise it and prepare it for the press. I, therefore, requested my senior colleague Dr. Y. D. Sharma to finalize the draft, get some of the the illustrations drawn in his office and prepare the bibliographies. I gratefully acknowledge his most willing help into the matter.

Fortunately, Shri B. K. Thapar, our General Secretary, is now with us once again after his return from Cambridge. We are happy to include his note also. We gratefully acknowledge the greetings from our former General Secretary, Dr. A. K. Narain, now Visiting Professor in the Wisconsian University. I, however, regret to record a wrong information printed in the editorial of the last number of the Bulletin and brought to my notice by my friend Shri I. K. Sharma : Shri V. D. Krishnaswami died in a hospital at Banglore and not Hyderabad.

During the last decade archaeological activities in India were concentrated not only in western India but also in Punjab, Harayana and western U.P. The so called Dark Age—between the later days of the Harappa culture and the beginning of the Painted Grey Ware period—was slowly and gradually getting lighted. However, due to the prolific writings of Prof. Sankalia, including his excavation reports of Navdatoli, etc., only the chalcolithic cultures of western India and the Deccan became known to the students and teachers in the universities of India and abroad ; the knowledge of the Copper Age cultures of the Punjab and Harayana remained confined to the field archaeologists. The present seminar-proceedings seek to remove this lop-sided emphasis on the chalcolithic cultures of western India by bringing into light the personality of the OCP culture and the crucial role that is played in bringing the Harappa culture into contact with the Copper Hoards of the Ganga basin. In the second millennium B. C. it served as a great bridge between Punjab and Uttar Pradesh. In socio-cultural terms it seems to have sustained and carried forward the 'system' that was created by the Preharappans and maintained by the Harappans. Some of the religio-cultural elements of the present day Hinduism, now identified as Harappan in origin, certainly passed through the OCP, PGW and NBP complexes. This is what Malik calls 'continuation' of 'Indian style' through the process of 'Indinization' in his monograph *Indian Civilization : Formative Period*, reviewed in the last number of the Bulletin. Here, some glimpse of that process can be had through the Ochre Coloured Pottery complex.

It may be emphasized that at least one more seminar of this nature is essential. The theme should be something like this: Archaeology of the second millinnium B.C. in and around Punjab and Haryana. Broadly speaking, it should bring out in relief the interplay of cultural forms that the Preharappan and Harappan complexes were assuming due to various internal and external factors in the period between the later days of the Harappans and the beginning of the PGW. In this context appendices on Siswal, Mitathal, Bara and Bahedrabad are extremely significant. How I wish there is one more Sankalia with us in India to write the archaeology of Punjab and Haryana of the second millinnium B. C.

S. P. Gupta

GENERAL SECRETARY'S NOTE

One of the principal aims and objects of the Indian Archaeological Society is 'to hold periodical seminars and gatherings for academic purposes.' With a view to fulfilling this task worthily, the Society organised, in May 1971, a seminar on Ochre Colour and Northern Black Polished Wares, of which the proceedings are published in the present issue of *Puratattva*. Apart from reporting the discussions in the sessions on these two Wares, opportunity has also been taken to include, under appendices, other relevant material, which provides a perspective to the problems discussed.

The value of such seminars in archaeological investigations does not need any elucidation here. Suffice it to mention that they provide an occasion, through informed criticism, for the proper evaluation of the available evidence. In the present case, the evidence on these two ceramic industries had been accumulating during the last two decades, and, in the words of Sir Mortimer Wheeler, had taken the shape of an 'untidy heap'. It was felt desirable, therefore, that this 'heap' should be given 'an assured place in the landscape' of Indian archaeology.

The various issues related to these ceramic industries have been discussed in sufficient detail with patient objectiveness. As I was not present at the time of this seminar, I would like to bring to the notice of the scholars some of the problems, notably concerning the 'Copper Hoards', which have remained an unsolved mystery. Why were the 'Copper Hoards' found localized at one place on a site? Is the deposition of the copper objects in hoards a normal feature in the life of the comm-

unity? If so, does the findspot represent the armoury of the community or the workshop of the guild of smiths? At Saipai, where the excavation has been conducted with an informed purpose, the harpoon and the hooked-sword (obtained from the excavation proper) were found at varying depths below surface (respectively 45 and 28 cm.), within a radius of five metres of the reported find of the 'Hoard' (at about 30 cm. below surface). Pottery continued to occur to a depth of 91 cm., with a concentration between 8 and 51 cm. Does this phenomenon prove or disprove the hypothesis of sheet-flooding in this area? Arising from this is the problem of the composition of the Copper Hoard- and pottery-bearing deposit. Although this aspect of enquiry concerns largely the sedimentologist, to the naked-eye there does not seem to be any appreciable difference between the composition of the soil containing the 'Copper Hoards' and the pottery, and the natural soil, underneath it or, for that matter, even the deposit lying against the so-called settlement (as observed at Saipai, and Nasirpur) We may also consider the functional aspect of the objects and study their use-marks, if any. It has been pointed out elsewhere that 'this tool-kit has a predominant hunting bias', but the evidence seems to be more indicative than conclusive. From the nature and contents of the various 'Hoards' it is apparent that they did not belong to an individual family but were intended to be used for a specified purpose by the community as a whole or at least by a section of it. This would imply the organization of the society into different sections, some of which might have been practising husbandry. The occurrence of stone pestles and rubbers at Saipai, Lal Qila and Ambkheri already suggests the use of cereals. In fact, the economic base of the Copper Hoard Culture still remains to be properly investigated.

B. K. Thapar

Erratum : The press regrets a misprint on page 4. Second sentence of para one should read : Short articles, etc., on Bahadrabad, Baharia, Noh and Saipai, have been added . . .

OCP AND NBP : 1971

Proceedings of the Seminar held by the Indian Archaeological Society, on the 11th May, 1971, at the National Museum, New Delhi, on Ochre-Coloured Ware and Northern Black Polished Ware

Edited by
Dr. Y. D. Sharma

SOME RECOMMENDATIONS

1. That the term OCP should be retained for the present.

2. However, when in full it may be written with small letters (ochre-colour pottery or ware), indicating the particular variety by site name in bracket, e g , OCP (Bahadrabad).

3. The term NBP should be retained.

SEMINAR ON OCP AND NBP WARES

Inaugurated by	Shri C. Sivaramamurti
General President	Shri A. Ghosh
General Secretary	Dr. S. P. Gupta
Convener	Shri K. N. Dikshit

SESSION ON OCP

Chairman	Shri M. N. Deshpande
Secretary	Shri K. N. Dikshit

SESSION ON NBP

Chairman	Dr. K. K. Sinha
Secretary	Dr. D. P. Agrawal

OTHER PARTICIPANTS

1.	Shri Amrendra Nath	New Delhi
2.	Shri B. K. Bhattacharya	New Delhi
3.	Shri B. M. Pandey	-do-
4.	Shri B. N. Tandon	-do-
5.	Miss Chhaya Bhattacharya	-do-
6	Shri J. G. Mathur	Nagpur
7.	Shri J. S. Nigam	New Delhi
8.	Shri K. C. Verma	Ghaziabad
9.	Shri K. Deva	New Delhi
10.	Shri K S. Ramachandran	-do-
11.	Shri L. M. Wahal	Kanpur
12.	Dr. L. Morton Smith	Toronto, Canada
13	Shri M. C. Joshi	New Delhi
14	Miss M. Donavan	-do-
15.	Shri B. L. Nagarch	Bhopal
16.	Shri N. C. Ghosh	New Delhi
17.	Dr. N. R. Banerjee	Kathmandu, Nepal
18.	Dr. (Mrs.) Omi Manchanda	New Delhi
19.	Shri R. C. Gaur	Aligarh
20.	Shri R. G. Pandey	Calcutta
21.	Shri R. P. Sharma	New Delhi
22.	Dr. R. S. Mittal	Roorkee
23.	Dr. Romila Thapar	New Delhi
24.	Shri Shankar Nath	New Delhi
25.	Shri Suraj Bhan	Kurukshetra
26.	Shri W. H. Siddiqi	New Delhi
27.	Dr. Y. D. Sharma	-do-

FOREWORD

In its last annual general meeting held at Nagpur in November, 1970, the Indian Archaeological Society decided to organise group discussions on the Ochre-Coloured Pottery (OCP) and the Northern Black Polished Ware (NBP), with a view to settle certain issues posed by recent field researches. The issues related to nomenclature, date, culture-contacts and diffusion of these two wares.

Accordingly, a day-long seminar was arranged on the 11th May, 1971. Through the hospitality of the authorities of the National Museum, the seminar took place in the Committee Room of the National Museum, New Delhi.

All scholars who had reported on either of the two wares named above, as a result of field-work carried out by them, were invited to participate in the seminar and also to bring some specimens of the wares for a fruitful discussion.

Altogether, thirty-five scholars attended the seminar at the invitation of Shri K. N. Dikshit, the convener. Shri A. Ghosh, former Director General of the Archaeological Survey of India, took the chair as the General President, while Shri M. N. Deshpande and Dr. K. K. Sinha acted as Chairmen respectively for the sessions on the OCP and NBP. Dr. S. P. Gupta, the moving force behind the seminar, was the General Secretary while Shri K. N. Dikshit and Dr. D. P. Agrawal were the Sectional Secretaries of the OCP and NBP sessions respectively. Shri C. Sivaramamurti, Director, National Museum, inaugurated the seminar.

The session on the OCP decided that in view of the differences on the issues involved, it was not possible to settle them at this stage. A helpful procedure would, therefore, be to publish drawings of selected pottery from different so-called OCP sites, together with a brief note on ancillary findings, and to place this publication before the next annual general meeting of the Society for such action as it may decide to take in future.

We have not found it possible to act exactly in accordance with the above decision. But along with the proceedings of the seminar, we have included drawings of selected pottery from important OCP and allied sites, in order to enable the next general meeting of the Society to take suitable further action.

The speeches and comments as supplied by different speakers, or as very kindly recorded by Sarvashri Ram Swarup and O. D. Dogra of the Archaeological Survey of India, New Delhi, are being reported here with the minimum of pruning and recasting, mainly in order to avoid repetitions and superficialities. It is hoped that this publication would encourage further deliberations, leading ultimately to a satis-

factory solution of the issues involved. The seminar provided on opportunity to scholars and field-workers to meet and exchange views. It is left to the readers to decide what success attended the brief seminar. We, on our part, are most grateful to the participants who spared a full day from their busy life to attend it.

A bibliography of important articles have been included in the appendices. Short on Bahadrabad, Baharia, Noh and Saipai, articles etc. have been added, also as appendices, to make the proceedings a self-contained compendium on the subjects discussed. We have also included extracts from scientific reports on the NBP.

We acknowledge with thanks the loan of a few blocks of line-drawings of potteries given by the Director General of Archaeology in India. Similarly, we thank Prof. G. R. Sharma of the University of Allahabad for sending us the so far unpublished material of his excavations at Baharia, and Shri B. B. Lal and Shri L. M. Wahal for the drawings of pottery from Saipai, their epoch-making discovery. Our grateful thanks are due to many colleagues in the Archaeological Survey of India, New Delhi, particularly to Sarvashri A. K. Ghosh, M. S. Mani and S. S. Saar for the excellent drawings and to Shri Gulshan Lal for typing the manuscript.



INAUGURAL SPEECH BY C. SIVARAMAMURTI

The Indian Archaeology Society is again holding a seminar, and this time at New Delhi. We have amidst us today, Shri A. Ghosh, occupying the chair as the General President of the seminar. We should be proud of this moment, and we are grateful to him for his presence here. Today, if Indian archaeology is understood widely, it is largely due to him. We know that archaeology, in all its aspects, is dear to him. Shri Ghosh combines the past and the present. The Indian Archaeological Society should be proud of holding this seminar under the presidentship of Shri Ghosh, who would guide the deliberations today. In welcoming Shri Ghosh to the National Museum, which is his old haunt, we are very grateful to him and accord him a hearty welcome. I am also sure, you will all make this seminar a great success.

INTRODUCTION

by A. Ghosh

Shri Sivaramamurti has praised me, although I do not know how much I deserve his praise. Anyway, I appreciate the sentiments expressed by him. The subject of discussion today is the OCP and NBP wares. While the subjects have been discussed on many an occasion before, and there are many publications dealing with them, I do hope that the deliberations of this seminar will throw some new light on the problems, particularly those that Dr. D. P. Agrawal has on C^{14} dating, I request Shri Deshpande now to speak and open the session on the OCP.

SESSION ON OCP

M. N. Deshpande (Chairman)

The OCP has been a subject of discussion, and it continues to be so in spite of the work of the last twenty years. You may remember that shri Lal's efforts at Hastinapura brought to light in the lower levels a ware, which he described as Ochre-coloured Ware (Lal, 1954-55). He himself has not been very happy about the designation of this ware (fig. 5) for he found this ware, which was probably ill-fired and not slipped, when rubbed, assumed a different shape. Moreover, while writing the report, he was faced with the problem of placing it in definite cultural context. He thought perhaps it would be associated with the Copper Hoards of the Ganga valley, and extended in region of Bihar and beyond the Vindhyas. In order to pursue the problem further, he made some digging at Bisauli and Rajpur Parsu (Lal, 1951) and here also he found pottery which was designated by him as OCP. Subsequently, Y. D. Sharma did some excavation at Bahadrabad (Sharma, 1961). At one place of the site, some digging was going on for the sake of a canal, and the canal-diggers had found some red pottery and copper implements. It was after this that Sharma

excavated this very area, and got the same pottery which could be called OCP. Unfortunately, no copper tool was found by him.

For my part, I explored the upper Gangetic valley with students of the School of Archaeology and encountered a number of OCP sites. Of these, Ambkheri interested me most although the mound there was not very prominent. Again, close by, there was another site named Gadharona, about 6 kms. north of Ambkheri. Further south, we examined the site at Nasirpur where I was told that a copper hoard had been found earlier and now it is exhibited in the Gurukul Kangri Museum, near Hardwar. As a result of this exploration, a small-scale excavation was carried out at Ambkheri (Deshpande, 1965-1 and 1967-1). Shri K. N. Dikshit actively assisted me in this work. The occupational deposit of the OCP here varied from 1·00 to 1·25m. We did not get a single sherd with any painting. The slip has a tendency to peel off. For the first time we got a variety of OCP shapes, not noticed before in any excavation. Noteworthy types included large trough, bowl-like lid with central knob, dish-on-stand with drooping rim, vase with horizontally splayed out rim, ring-stand and basin with under-cut rim (fig. 2). Associated with this pottery was a washed grey ware. Other associated finds include : a carnelian bead, terracotta objects like cart-wheel, animal figures (humped bull), and a fragmentary cake, and stone objects. Remains of a brick-kiln and a hearth were also noticed. I also excavated another site called Bargaon, situated on the right bank of river Maskara, a tributary of the Yamuna (Deshpande, 1967-2), where we got a very fine chert blade, a copper bangle (also a fragmentary chisel in exploration) and painted pottery of definite Harappan variety (figs. 3, 4). We also found some pots where the slip peeled off like the OCP.

Subsequently, two more sites were taken up for excavations: Lal-Qila and Saipai. The latter site was excavated by Shri B. B. Lal and L. M. Wahal of the Archaeological Survey where Copper Hoard tools were encountered for the first time with the OCP. (see Comments by Shri Wahal *p. 10 -ed.*).

In the course of further explorations, a large number of OCP sites have come to light from eastern Punjab (Dikshit, 1967-1), western U. P. and eastern Rajasthan. Evidently the OCP area is quite extensive (fig. 1).

Some scholars have also given thought to the nature of this pottery. This could be due to water-logging as a result of deluge (Lal, 1968). However, on the basis of the analysis of the soil samples from Atranjikhera and other sites, Dr. B. B. Lal thinks otherwise (Dr. Lal, 1969). He does not agree that the ware was water-logged for a long time. However, I must point out that even at Ambkheri, the layers were not very

distinctive, although we found hand-made bricks of different sizes, as also ash in the OCP horizon. At Jhinjhana in Muzaffarnagar district (Rishi, 1965), the random distribution of the sherds was noticed in the section.

Now I come to the problem whether it is necessary to change the term OCP. Everybody has expressed dissatisfaction with the present nomenclature. But if we change it now, there might arise some confusion. The second point is : Can we definitely establish the identity of this ware with the Copper Hoards ? If it is so, what is the nature of associated pottery of Copper Hoards in Bihar ? This problem has also to be tackled. Lohuizen connected a copper object found at Lothal with the anthropomorphic figure of the Copper Hoard (Lohuizen, 1960). We may have to consider OCP's relationship with the Harappans also. Did it have an independent origin (Dikshit, 1970 and Gupta, 1963)? Is it confined to the central Ganga-Yamuna Doab? From where did it originate? What about the Modhera (in District Mehsana, Gujarat) Copper Hoard reported by S. P. Gupta ? Can we relate all these tools and sites ? Why in most of the OCP sites clear stratification is absent ? How does the character of the pottery differ in the upper, central and lower Ganga-Yamuna Doab ?

I hope, the participants would touch upon all these problems while making their comments and offering suggestions.

S. P. Gupta

As far back as 1964, in the All-India seminar on Indian Prehistory held at Poona, I had put forward a few of my views on the OCP, which I would like to reiterate here with additional reasons. As we all know, the credit of recognizing this ware as a separate entity in the entire gamut of ancient Indian potteries goes solely to B.B. Lal (Lal, 1947; 1954-55). I would like to emphasise the words *separate entity*, because Lal could not see in the OCP an admixture of the Harappan pottery. I would again like to emphasize the words *could not*, because Lal had taken a particular stand on the problem of the Copper Hoards vis-a-vis the OCP. According to him, in the Ganga-Yamuna Doab the Copper Hoards and the OCP go hand in hand but the Copper Hoard tools and the Harappan tools have nothing in common. Obviously, if the Copper Hoard tools were different from the Harappan tools, how could the potteries associated with them be the same? But then some of the excavations in the upper Doab, particularly at Bahadrabad and Ambkheri, created some problems; since, although, by and large, the pottery at these sites looked like the OCP, it contained unmistakable elements of the Harappan ware, particularly in the typology of vases and basins, and also, probably,

dish-on-stand. Obviously, in the Poona seminar some of the participants felt that the OCP had no independent status of its own; one of them called it only a late Harappan ware. Somehow, I could not subscribe to any of these views. I felt that the evidence was not enough to dislodge the OCP from its independent pedestal. I agreed with Lal that in the Ganga-Yamuna Doab the OCP was associated with the Copper Hoards. This has now been proved by the excavations at Saipai, district Etawah, by L. M. Wahal. Obviously, the epicentre of this ware has to be sought in the area of greatest concentration of the Copper Hoards (Gupta, 1965). This area, on our present knowing, falls between Etah and Kanpur and includes the districts of Fatehgarh and Etawah. Since in one of my papers on Copper Hoards (Gupta, 1963) I had visualised the movement of the Copper Hoard people from the east to the west and of the Harappans from the west to the east, it was easy for me to visualise their contact in the upper Doab sites giving rise to the hybrid nature of the pottery at sites like Ambkheri. It means that as we go west of Bithur in district Kanpur, situated in lower Doab, we are likely to get more and more the admixture of the Harappan ware in the pottery complex of the OCP sites.

My analysis of the entire situation, therefore, brings out four facts: firstly, the Copper Hoard people were the late contemporaries of the Harappans; secondly, the OCP people came in contact with the Harappans in the upper Doab; thirdly, the OCP has a separate entity, and, finally, the epicentre of the OCP lies between Etah and Kanpur, although its origin seems to lie somewhere between Etawah and Kanpur.

I, therefore, plead for retaining the term OCP for a ware which was essentially non-Harappan to begin with, but which, in a particular culture-contact situation in the upper Doab, imbibed a number of Harappan traits. I am not inclined to call it pre-Harappan, since on circumstantial evidence (Gupta, 1963) I do not date the Copper Hoards prior to 2000 B.C. I also do not consider it as totally post-Harappan, since at one stage, probably between 1800 B.C. and 1600 B.C., it overlapped with the Harappan pottery. I am inclined to consider it as a late contemporary of the Harappan ware, which continued to flourish in post-Harappan times. Although stratigraphically it has so far not been found overlapping at the upper end with the Painted Grey Ware, such a possibility cannot be completely ruled out, particularly, in Haryana and western U.P. The Modhera hoard has four antennae swords of bronze which will soon be published.

K. N. Dikshit

The present nomenclature of the ware, to my mind, should be retained. The study of the OCP from different sites reveals two areas of development : (a) central Doab, and (b) upper Doab and east Punjab. These two areas are distinguished entirely

on the basis of the comparative ceramic types present and absent in the Harappan complex of this region. The pottery types in area (a) are not only limited, but their finish is also inferior, whereas the area (b) has a variety of utilitarian types, also present in the Harappan complex (including Bara) of this region (Dikshit, 1970).

The jar with horizontally splayed out rim is a common type of the areas (a) and (b) and late Harappan. The typical compartmented incised designs noticed in area (a) have a close resemblance with similar patterns at Bara (Dikshit, 1969-1).

The complete absence of the Harappan traits from most of the OCP sites of area (b) shows that the OCP in that area had nothing to do with the Harappans.

The users of the OCP were the original inhabitants of the Ganga valley and their migrational trend was from the central Ganga-Yamuna Doab (Baharia, district Shahjahanpur, U.P.) to upper Ganga-Yamuna Doab and east Punjab (Katpalon, district Jullundur, Punjab).

As the soil analysis of the OCP strata is still under the active consideration of sedimentologists, it is difficult for archaeologists to accept or discard any view (flood or wind-blown action) regarding the mode of transportation and deposition of the material in which pottery etc. are found buried. (For the controversy, see Dr. B.B. Lal, Shri B.B. Lal, and others elsewhere in the volume, -*ed.*).

D. P. Agrawal

The problem of OCP has defied all solution, because we have not made a systematic multi-pronged attack on it so far.

There are various confusing issues :

(i) Dr. B. B. Lal has tried to prove that OCP-associated deposits are aeolean in origin (Dr. Lal, 1969). How can one then explain the interspersing of potsherds in these deposits? The confusion gets worse confounded by Shri B. B. Lal's use of the same data for proving fluviatile nature of the sediments (Lal, 1968).

(ii) There are various pottery affinities suggested: from Harappan, Cemetery-H to Bara.

(iii) At Saipai, an association of the OCP and Copper Hoards is reported. But have we one uniform OCP in the whole of Doab, or are there a number of OCPs ?

(iv) What is the definition of OCP repertoire?

So long as one keeps on arguing on a subjective basis, there cannot be any meaningful solution of these problems. The first step, therefore, should be to collect more data in a systematic way. I, therefore, suggest the following plan of action:

(a) Leading workers, like Lal, Deshpande, Gaur, Sharma, Wahal, Dikshit and Suraj Bhan, should be asked to report on the OCP shapes of their sites.

(b) Under the leadership of the Society, a comparative morphology should be compiled.

(c) Sedimentological analyses from a number of sites be carried out to determine the origin of the sterile sediments associated with the OCP.

(d) Metallurgical analyses of a large number of Copper Hoard artefacts should be carried out to determine the techniques used, as also to correlate them to the mines exploited.

(e) These multiple data should be published for scholars to synthesise them for resolving the problem of the OCP.

If the above steps are taken expeditiously, we will soon be able to say something meaningful and tangible about the OCP.

R. C. Gaur

On the basis of a few pottery types, the OCP was taken by some scholars as a handiwork of the Harappan refugees (Ghosh and others, 1965). The degenerate state of pottery has been attributed to long-time water-logging. However, a detailed study of the pottery types and the habitational pattern of the OCP people and those of the Harappans has shown that the material cultures of the two peoples are different from each other, and independent. The presence of a few Harappan pottery shapes at Bahadrabad (Sharma, 1961), and Ambkheri (Deshpande; 1965; 1967-1) merely suggests that the two cultures had flourished simultaneously at least for some time, and their peoples had come in close contact with each other somewhere near the western border of Uttar Pradesh, and both had borrowed something from each other.

However, the sites which are away from the border were almost free from the Harappan influence and their deposits bear local and indigenous features. Of all these

sites, two, viz., Atranjikhera and Lal-Qila, are typical and important. Both of these have many common features and may broadly be grouped together. Both the sites have yielded painted as well as incised pottery in considerable number (figs. 6 and 7). These devices for decorating pottery are conspicuous by their absence at other OCP sites. However, Saipai, which is also an easterly site, has yielded pottery with incised designs (see article in appendices, -*ed.*). The majority of the shapes at these three sites are common, and, therefore, they maintain regional homogeneity. While much is known now about the OCP of Atranjikhera (Gaur, 1965-1, 2; 1969), the detailed report on Saipai is awaited. It would, therefore, be better if we analyse here briefly the chief characteristics of the Lal-Qila pottery.

The general features usually noted about the OCP at other sites, viz. rolled edges, porous, powdery surface, ill-firing, etc. are rare at Lal-Qila. This major difference may be due to the fact that Lal-Qila pottery complex comes from an undisturbed habitational site, whereas the other complexes belong to disturbed sites, presumably, all affected by water-logging or other weathering conditions.

Lal-Qila pottery deposit includes a variety of shapes (fig. 7), which may be classified broadly into seven groups : 1. storage jars; 2. vases; 3. basins; 4. bowls; 5. lids; 6. dishes-on-stand (?); and 7. miniature pots. Among these shapes, vases represent the richest variety of types, including those which have vertical handles attached between the rim and the shoulder (no. 4). Basins and bowls are available in different sizes and are generally deep One of the bowls (no. 9) indicates that a set of legs was attached to it at the base, while a few of the big basins had horizontally or vertically attached looped handles (nos. 5, 12). It may be noted that while a large number of handles were found at Atranjikhera, complete pots with handles were not found. However pots with ring base is a common feature at Atranjikhera. Though not a single complete dish-on-stand has been found, broken sherds indicate that some type of dish-on-stand is also present at Lal-Qila. The excavation has yielded a variety of interesting miniature pots, generally complete.

Atranjikhera was the first site to have yielded painted designs on the OCP, but Lal-Qila pottery has considerably increased our knowledge about their technique and motifs. These appear to have been executed with bold hand. Among the interesting paintings mention may be made of an elongated humped bull, segregated leafy design, floral motif, hatched triangles, circles, etc.

As compared to Atranjikhera, though the incised designs here are fewer in number, their lines are deeper and larger. A significant discovery was the graffiti

marks noticed for the first time on OCP sherds. Typical ochrous sherds are small in number at Lal-Qila, since they come from proper habitational layers.

J. S. Nigam

To my mind, the term OCP needs change. I have classified the OCP sites and have divided them into four groups. In the first group are sites like Ambkheri, Hastinapura and Noh, where no copper has been found. In the second group are sites which yield OCP along with copper tools. These are, Bahadrabad, Bargaon and Saipai. The third group includes sites where OCP has not been found, although copper tools are reported with other wares. The fourth group includes sites where only copper tools have been found, and no other find is reported.

The OCP has red ochrous, yellow ochrous and greyish pottery. I also recall that the Harappan wares are of corresponding three colours, i.e., red, buff and grey. I feel that the ware in different regions is outwardly similar but there are variations in fabric, and as such the OCP of a particular type may be named after type site, such as Bahadrabad ware, Atranjikhera ware, and the like.

L. M. Wahal

Saipai, a village in tehsil and district Etawah, is situated about 18 km. north from Etawah Railway Station and is connected by road which leads to Mainpuri. It is a small village with a predominant population of cultivators.

In July, 1969, while ploughing a field, a Copper Hoard was reported from the village and most of the implements were carried away by the police for investigation. Only a few implements out of the big hoard, were returned to the owner of the land. These were later sold by the owner to a local hawker who melted them for disposal as molten metal.

Shortly after the report of the hoard came to my notice, I rushed to the site and investigated the matter further and after a great deal of persuasion, I could obtain from the dealer only one hooked sword, which was later shown by me to Shri B.B. Lal. Keeping in view the importance of the hoard and the site, a trial sounding was initiated by me, which was, later on, extended under the instructions of Shri Lal. During the operations, one hooked sword and one harpoon were found along with ochre-coloured ware It firmly established the missing link between the typical copper hoard tools and OCP. Since the association of the hoard with the OCP has been established here, I humbly

suggest that instead of calling it OCP culture, it may be called Copper Hoard Culture.

The land at Saipai is flat, covering an area of about two *bighas* with a deposit of 1·00 to 1·15 m. The occurrence of a small Harappan type chert blade during the excavation needs further investigation. The nature of the ware, as is evident from its name, runs from orange to red colour, and in a few cases it retains a slip. Mostly, vases, bowls and basins were found. The rims of these vessels were splayed out, flaring, incurved or outcurved. Dish-on-stand is suspected. There are several pots with strap handles, as also pots with short but pronounced spouts and lips. (see article in appendices, *-ed.*)

The excavated deposit at this site also, by and large, was devoid of prominently marked regular layers of habitational debris. But I could not detect any disturbance in the layers; the deposits were simply mixed. I myself cannot assert whether the site was subjected to any flood or not but the slip on most of the pots has peeled off and the overall nature of the pottery indicates water-weathering.

M. C. Joshi

The Copper Hoard implements of western U. P. sites should be associated with OCP or other red wares with great caution, particularly in view of the highly refined cast tools, indicating complicated copper technology. In the light of such tools, the standard of economy reflected in excavated material from the sites appears to be very poor, indicating semi-hunting pastoral economy. How could the people, who prepared such fine implements, have such an ordinary culture? I, therefore, feel that either these tools have no connection with the OCP or similar other cultures, or else they belong to an earlier Copper-Bronze Age culture.

N. C. Ghosh

In my view till the association of the Copper Hoards and the OCP is firmly established at more than one site, the pottery (OCP) should be termed as Bahadrabad Ware. The types from Bahadrabad should form a key to further classification for upper Doab. There are certain types which are common between Ahichchhatra and Bahadrabad. (see article in appendices, -ed.)

I have also observed that a number of painted pots, particularly of Bara fabric, tend to appear like OCP owing to weathering after excavation, unless chemically treated and preserved immediatly on exposure. Therefore, there exist many chances of wrong identification, if we simply go by colour scheme and do not give due regard to typology.

I would plead for a comparative study of the Bahadrabad pottery. (See article in the appendices *-ed.*)

Shankar Nath

The pottery called OCP was first christened at Hastinapura, on the basis of the fabric and texture of the ceramic. This name was not given in any cultural context at that time. Some of the OCP sites explored in recent years have produced pottery shapes comparable with Harappan, whereas a number of sites also show local characteristics. It is not yet certain as to who the people responsible for the manufacture of this particular kind of ceramic were. Whether they were the Harappans or some separate group of people inhabiting the Ganga-Yamuna Doab? Till this problem is finally settled, I feel that we should retain the nomenclature, because OCP is the name given to a particular kind of pottery and not to any culture.

This pottery is accompanied by a grey ware which also has all the characteristics of OCP. However, at present the whole lot is called as OCP, and I differ with the suggestion of J. S. Nigam that as OCP complex has also got some percentage of grey ware sherds, its nomenclature should be changed.

I have myself explored at least two dozen sites of this ware in district Saharanpur, while doing village-to-village survey. On the basis of my experience, I would like to emphasise that none of the sites is extensive, not being more than 100 m. on each side. The occupational deposit ranges between 0·75 to 1·50 m. The types are limited, as pottery from Anwarpur Baroli shows (fig. 12). What does this indicate? Perhaps it is indicative of a short span of time for the habitation at one place. Saharanpur district is the region in upper Doab where Harappan and OCP sherds have been picked up from the same site.

Most of the OCP sites are considered to be devoid of structural remains, except a hearth and brick-kiln, noticed at Ambkheri, where traces of hand-made bricks were found (Deshpande, 1967-1). A wedge-shaped burnt brick was also noticed in explorations at Hardakheri, and as the site is a pure OCP one, this brick fulfils all conditions for being called an ochre-coloured brick.

Almost all the OCP sites have yielded ill-fired pottery. Does this imply that the ceramic was deliberately ill-fired and ill-firing was not accidental? Or, does it mean that the people who fashioned this pottery were not competent enough or expert in preparing ceramic of quality? The question needs proper investigation.

There are a number of sites which are below the present ground surface and pottery was collected from pits dug by the villagers. Most probably these underground sites were situated at comparatively low levels and were covered by deposits either brought by floods or winds during the passage of time.

N. R. Banerjee

I should like to agree with D.P. Agrawal. We should be definite in our minds if copper tools are associated with OCP.

Everybody knows that water rises due to earth-movements and earthquakes. In Nepal, where Asoka had gone and where there are monuments associated with Buddha, I find a lot of pottery, grey and NBP wares included, without any slip. Such appearance of pottery, which is characteristic of the OCP, could be due to flood.

K. Deva

The OCP deposit at all known sites is shallow, not exceeding 1·5 m. in thickness. From the evidence of the site of Saipai, discovered by L. M. Wahal, no doubt is left regarding the identity of the authors of the OCP and the Copper Hoards. The uniformly shallow deposits indicate that the authors of the OCP were a nomadic people who did not lead a settled life at any site for a considerable time. They perhaps lived in temporary huts or shelters and subsisted partly on hunting and fishing and partly on a mixed pastoral-cum-agricultural economy. As a nomadic people they formed a vagrant culture.

From the variety of sophisticated copper tools found among the Copper Hoards, it is clear that the authors were proficient in smelting copper and fashioned them in a number of sophisticated shapes, like shouldered celt, harpoon, antennae sword and anthropomorph. Their pottery also shows a fair variety of types and frequent use of incised and, in rare cases, even simple painted designs. The fabric is medium to thin and much of the pottery originally was slipped. Owing to these sites being subjected to frequent flooding, the pottery not only lost its slip but also became friable and brittle. This is the result obviously of water-logging and not of indifferent firing or lack of potter's skill. A people who knew the technique of smelting copper at a high temperature certainly should have known how to fire pottery properly.

The anthropomorph is more likely to be a primitive object of magic or cult significance rather than a tool or weapon. The early form of *srivatsa* appears to have been

derived from it. I do not agree with D. P. Agrawal that it was a missile or a weapon similar to modern boomerang.

Suraj Bhan

Much water has flown since the discovery at Hastinapura of the ill-preserved, pale red ware, of medium to fine fabric, seemingly wheel-turned and called the Ochre-Coloured Ware or OCP (Lal, 1954-55). The pottery bearing family likeness to Lal's OCP has been reported from nearly 90 sites in the Ganga-Yamuna Doab and from Noh near Bharatpur in Rajasthan. More than half a dozen of these sites have been excavated, including Bahadrabad, Ambkheri, Atranjikhera, Ahichchhatra (Banerjee, 1969), and Saipai, details of which have been given today by L. M. Wahal. These excavations have expanded our horizon on the nature of deposit, the ceramic complexes and the associated finds. The sporadic occurrence of the OCP in yellow brown sandy deposit devoid of any sign of habitation and imperceptibly merging into the natural soil is significant (Lal, 1968). The discovery of a burnt brick at Bahadrabad, an ovaloid oven dug in the ground and lined with hand-made mud bricks at Ambkheri, perhaps used for manufacturing *gur* and another at Ahichchhatra, and a terracotta bull at Ambkheri only emphasise the extreme paucity of antiquities and structural remains in the culture. However, the discovery of the Copper Hoards from Rajpur Parsu, Bisauli, Bahadrabad, Nasirpur and Saipai indicates the richness of the OCP culture in copper implements. The tools include the typical harpoon, anthropomorph, hooked spearhead, flat celt and ring.

Where preserved, the pots show a thick red slip, which is rarely painted with black bands. At Atranjikhera, the incised decoration on the exterior of pots marks a distinct note. The main pottery shapes of OCP, as illustrated by K. Deva and R. C. Gaur (Deva, 1969; Gaur, 1969) include:

1. vase with out-curved rim and ledged neck (Gaur),
2. vase with flaring rim (Deva, no. 1; Gaur),
3. vase with flanged rim (Deva, no. 1b; Gaur),
4. bowl-like lid with a central knob (Deva, no. 14),
5. bowl-with convex profile and blunted rim (Deva, no. 13),
6. bowl with flaring rim (Gaur),
7. bowl with flanged rim (Gaur).
8. bowl with convex profile (Gaur),

9. basin with beaded undercut rim (Deva, no. 22),
10. dish-on-stand with short drooping rim (Deva, no. 9),
11. dish-on-stand with long drooping rim (Deva, no. 8),
12. dish-on-stand with hooked rim (Deva, no. 7c),
13. squat stem of dish-on-stand (Deva, A),
14. loop handle vase (Gaur),
15. channel spout (Gaur),
16. tubular spout (Gaur),
17. ring-footed bowl or vase (Gaur), and
18. flask (Ambkheri, fig. 2 no. 11).

As to the authorship of the OCP there exist mainly two shades of opinion among Indian scholars. The first view expressed by Y. D. Sharma (Sharma, 1961), though later modified and subsequently supported by A. Ghosh and other (Sharma, 1965; Handa, 1968), identified the OCP with a degenerate Harappa culture carried to the Doab by refugees. The recently growing second view that the ware is essentially non-Harappan with only marginal Harappan influences at sites like Ambkheri and showing regional features in incised decorations at Atranjikhera is held by S. P. Gupta, M. N. Deshpande, K. Deva, K. N. Dikshit and R. C. Gaur (Gupta, 1963; Deshpande, 1969-1; Deva, 1969; Dikshit, 1969; Gaur, 1970). In the absence of published reports on the excavated OCP sites, one is greatly handicapped in examining the problem with any amount of thoroughness. At least a detailed catalogue of OCP types, so meaningfully suggested by H. D. Sankalia in the annual conference of the Archaeological Society at Nagpur and emphasised by D. P. Agrawal, is an outstanding need to facilitate a serious study of the OCP problem. I would examine this problem here mainly from the point of view of typology.

Although the OCP sites of the Doab show certain common features, the ceramic assemblages suggest their classification into broad groups, A and B. The OCP of Group A is characterised by a composite ceramic tradition suggesting the commingling of the (i) surviving Harappan, (ii) Cemetery-H, and (iii) non-Harappan and non-Cemetery-H elements, as at Ambkheri. Group B is distinguished by predominance of the last category of elements and is almost free from the other two categories of wares, i.e., the Harappan and Cemetrey-H, as at Atranjikhera, Saipai, etc. The Group A includes almost all the shapes enumerated earlier, except nos. 5,14,15,16, and 17 in the above list, while Group B is distinguished by the absence of nos. 9,10,11,12, and 18 occurring in Group A. The prevalence of type nos. 5,14,15,16, and 17, unknown to Group A, is a conspicuous feature of Group B. The incised decoration on the

external surface met on the vessels of Group B is absent from Group A. These typological differences in the two groups of the OCP are not blurred by the occurrence of some common shapes for their simple and elementary nature. The use of wheel and the absence of any stratigraphical evidence of its gradual evolution precludes the possibility of an independent local origin of the so-called OCP.

A comparative study of the pottery types of both the groups of the OCP throws significant hints on their genesis. The Group A ware shows close affinities with the Bargaon and Alamgirpur wares in most of the types (figs. 3-4; Deshpande, 1967-2; Sharma, 1959) In fact, the Group A is nothing more than the Bargaon ware minus the classical Harappan shapes, of course, if we overlook the accidental character of the state of preservation in case of the former. All the three ceramic traditions of OCP comprising Group A are present at Bargaon and Alamgirpur. It is for this reason that M.N. Deshpande and Krishna Deva recognise the association of OCP at both the sites in the Harappan complex. Ambkheri represents a decadent stage having limited Harappan traits.

The ceramic industry noticed at Bargaon and Alamgirpur is a widely distributed late Harappan ceramic tradition of north India representing a composite phase of culture pointed out by me elsewhere (Suraj Bhan, 1967). This pottery has been discovered as far west as Katpalon near Jullundur (Dikshit, 1967; 1969) and as far south as Mitathal near Bhiwani excavated by me in 1968 (Suraj Bhan, 1969). In the north, it extends to the Siwalik hills at Bara (Sharma, 1954: 1955) Dher Majra (Olaf Pruefer, 1952; Sharma, 1954), and in the east to Manpur and Bhatpura (R.C. Sharma, 1961; Y.D. Sharma, 1961). A stratigraphical context to this ware has been provided by the excavation at Mitathal and new light thrown on its genesis by it.

In this connection I may mention the ancient site of Siswal (29° 10′N. lat; 75° 30′E. long.) at a distance of 26 km. to the west of Hissar on the left bank of Chautang, identified with the Drishadvati. An exploratory digging at the site by me in 1970, revealed a sequence of two phases called A and B and comparable respectively with pre-Harappan and Harappan periods of Kalibangan. Phase A is characterised by typical Kalibangan fabrics, use of white pigment in addition to black on red surface and the occurrence of incised decoration on the interior of troughs or basins. Phase B, confined to the top levels of the site, is distinguished by a sturdier pottery evolved from early Siswal tradition. It is painted in black monochrome and has a paucity of shapes and painted designs.

The excavations at Mitathal revealed two periods: I and II. Period II was

further subdivided into two phases: IIA and IIB. Period I is characterised by late Siswal, i.e., Siswal B, or late Kalibangan ware. Although all the six fabrics of Kalibangan (Lal and Thapar, 1965) are represented in the period, the more common are Fabrics A and C. The pottery is distinguished by a comparatively thick and sturdier variety painted generally with black bands over matt surface in black. The use of white pigment as noticed at Kalibangan or Siswal A ware is conspicuous by its absence. The thick troughs decorated with incised design on the interior are rare. The ceramic types and designs are evolved and lack variety.

Period IIA at Mitathal is characterised by the appearance of Harappan culture. The Harappan pottery contains its classical shapes like dish-on-stand, beaker, perforated jar, tall vase with pointed base, and the vase with beaded rim, raised neck and globular body. Painting is mainly confined to horizontal black bands over light red slip. It is significant that the late Siswal or Siswal B tradition of ceramic industry survives side by side throughout the period unlike at Kalibangan.

Period IIB is marked by a gradual decline in the ceramic traditions of the previous period. The classical Harappan shapes, like the dish-on-stand, beaker, perforated jar and dish with nail-headed rim gradually become less popular. Squattish and sturdy dish-on-stand with hooked rim and drooping rim, vase with beaked or beaded and under-cut rim are the common shapes of Harappan derivation. Besides, the loop handle of vase, vase with flaring rim and vase with flanged rim (Bara type) and bowls with convex sides, tapering sides or carinated profile and featureless, thick, blunted and flattish everted, out-curved rims and basins with flaring, thickened, projected rims contain the Siswal ceramic tradition in this phase. A few shapes simulating the Cemetery-H types, such as dish-on-stand with flaring rim and sharp carinated shoulder and a ridge below the base of dish, jar with collared rim, flask, dish-on-stand with beaded and under-cut rim are also obtained from the site. The incised decoration on the external surface of the pots similar to that at Bara also occurs. The phase is marked by an exuberance of shapes and painted designs suggesting an almost resurgence of Siswal tradition.

The most significant of the associated finds of this phase from the upper levels are the copper implements, such as a flat celt, a ring comparable with those from Bargaon, Bahadrabad and Pondi and *parasu* comparable with one found in the Khurdi hoard from Nagaur district of Rajasthan (Sankalia and others, 1961) and from Daimabad I (Deshpande, 1959). A copper harpoon, almost identical with the one from Saipai, was recovered earlier from the surface at Mitathal near the trench yielding the above tools and its association with them seems quite probable on

circumstantial grounds.

Thus, we have seen that *the Bargaon ceramic industry, and for that reason the OCP of Group A, evolved from the fusion of the Harappan and the Kalibangan (pre-Harappan) or Siswal traditions*, a process which had already begun in Mitathal IIA, with a little sprinkling of Cemetery-H traits in the post-Harappan turmoil and eastward movement of people from at least northern Rajasthan forced by the growing dessication of the region due to hydrological changes (Suraj Bhan, 1970). The horizontal expansion of this vertically emerging Harappa-dominated composite culture gradually shed off the classical Harappan elements till they were rendered as destitute as the OCP people of Group A.

The OCP of Group B, on the other hand, shows a fair amount of typological similarity with the late Siswal ware. The OCP types, nos. 1, 2, 3, 4, 5, 6, 7, 8, 13, 14 and 16 (p .. above) are either similar to the late Siswal ware at Siswal, Mitathal, Sarangpur and other sites in the Sarasvati basin or are derivable from it. The excavations at Siswal and Mitathal have proved beyond doubt that the Siswal ware evolved through Siswal B or Mitathal I independently and later in a subservient form along with the Harappans. The horizontal extension of Siswal B ware, as known from the explorations carried out by me in the Sarasvati basin, shows that the ware extended from Sarangpur, near Chandigarh (Suraj Bhan, 1967) in the north, to Tigrana near Bhiwani in the south, and from Bani on the right bank of the Ghaggar near Rajasthan border in the west to Rukhi near Gohana and Baliana near Rohtak (information from Shri Silak Ram of Kurukshetra University). The explorations also revealed a concentration of Siswal ware sites in the lower Drishadvati and Yamuna valleys (old bed near Mitathal), and there is less classical Harappan influence in this part. *Thus the probability has been raised for a continuus evolution of the Siswal ware independent of the Harappan influence in the south-eastern parts of Haryana and further east in the lower Doab, which for no better reason than the state of preservation has been called the OCP.* In fact, this term was used by me for the ill-preserved and rolled late Siswal ware of Sarangpur having similar shapes. The examples of ill-preserved and rolled late Siswal ware are not wanting in the Sarasvati basin, which explains the peculiarity of the OCP. The late date for this group of OCP is suggested by the occurrence of evolved types like the vase with a flanged rim (no. 3) and bowl with blunted rim (no. 5) or flaring rim (no. 6) recalling the Mitathal IIB types and the occurrence of an identical harpoon at Mitathal and Saipai.

So far as the nomenclature of the OCP is concerned, it has nothing to commend about it but for its usage. The term signifies only a superfluous and perhaps accidental aspect of the state of preservation of the ceramic industry. It is bound to create

more confusion in the already complex cultural mileu of the region by its indiscriminate use by amateurs in the field. Since the cultural complexes of the Groups A and B of the OCP are now best represented at Ambkheri and Atranjikhera respectively, it is suggested to designate the two groups of the OCP after the names of these sites, where their cultural elements are best known.

Y. D. Sharma

I must own that each time I hear or see in print the term Ochre Colour Ware or OCP, I get a little confounded. When B.B. Lal surmised that the ill-fired, thick, ochre-washed pottery at Bisauli and Rajpur Parsu was likely to have been associated with the Copper Hoards found at these two sites, and that the ceramic industries of the lowest levels at Hastinapura might belong to the same class, which was christened by him as Ochre-Coloured Ware (Lal, 1947; 1954-55), he had very good reasons for holding that view in the absence of adequate data, particularly because he had only two clear shapes before him (fig. 5), and neither of these is such that it may be described unique or specialised. Lal certainly did not intend, if I understand him aright, that the term could be used for all red wares, which looked ill-fired, thick and worn-edged. He associated it with the Gangetic Copper Hoards, and thus limited its connotation. But with the Copper Hoards throwing out a challenge, we were floating helplessly midstream and tried to hang on to any straw that came our way. The practice that followed, therefore, was that any ill-defined, soft-fired, worn-edged, porous red ware, found in a likely copper tool association, was described as Ochre Colour Ware or OCP. Even a stalwart like H. D. Sankalia surmised that the red ware associated with copper tools at Nasik, Jorwe, Navasa and Navada Toli was like that of Gangetic sites (Sankalia, 1962, p. 225). I also recollect that unrecognizable Harappan sherds from Ropar (earlier spelt, Rupar, but spelling now revised by Punjab State), when first collected by my colleagues in the Archaeological Survey, were described by them as OCP. The entire range of red ware in the upper Ganga-Yamuna Doab came to be labelled as OCP, if it appeared to precede the Painted Grey Ware. If one could associate copper with it, that set the final seal on the categorization, even where a Harappan context was clear as daylight. In the Doab, upper and central, matters as they stand today, we have five categories of OCP: (i) Harappan, and those found at (ii) Bahadrabad, (iii) Atranjikhera, (iv) Lal-Qila, and (v) Saipai.

In 1961, I had drawn attention to the likeness between Bahadrabad and Harappan wares and felt that the so called ochre-washed or coloured ware was thus only a phase of Harappan ware (Sharma, 1961). It is in that context that I suggested that

the pottery from Bahadrabad could perhaps be called Bahadrabad ware. All OCP was not to be named Bahadrabad ware.

Alamgirpur, Bhatpura, Manpur, Ambkheri, Bargaon and a host of other sites in Bulandshahar, Meerut, Muzzaffarnagar and Saharanpur districts have already revealed clear Harappan or related affinities, and no purpose is served by labelling pottery from them as OCP. Bahadrabad's claim for being assigned the same niche is not very clear, and we could perhaps still call it as belonging to the OCP class, as defined by Lal. Atranjikhera has not yielded any specialised Copper Hoard tool, and with its variety of shapes, painted and incised designs (fig. 6), as an assemblage it is outside the Bahadrabad repertoire. Lal-Qila (fig. 7), again as an assemblage, does not tally with Bahadrabad, but some of its painted motifs have correspondence with those of Bara. The pottery from Saipai, selected specimens of which are on exhibit today (fig. 20), qualifies the test of being soft-fired, thick, worn-edged, porous and possessing generally shades of red colour, but is totally different from that of Bahadrabad, although it has some shapes which could be compared with those of Atranjikhera and Lal-Qila. In fact, Saipai, singularly qualifies the test for the title of OCP, having yielded typical Copper Hoard artefacts as well, even if its pottery technically is devoid of ochre colour.

If Harappan sites are eliminated, we are left only with Bahadrabad, Atranjikhera, Lal-Qila and Saipai as contenders for the title of sites yielding OCP. But do we have justification enough for linking them together under the same banner ? This is difficult to answer in 'yes' or 'no'. Yes, if we understand from OCP any worn-edged, soft-fired, porous pottery occurring or believed to occur with Copper Hoards. Atranjikhera and Lal-Qila have not so far yielded Copper Hoard tools, and the pottery from neither of them tallies *as an assemblage* either with Bahadrabad or Saipai. It is under no account a satisfactory solution. *I plead, therefore, that if we are to use the term OCP in definite Copper Hoard context, let us apply the term only for Saipai or sufficiently comparable pottery, and not for others. For others, let us use the term 'ochre colour pottery' or 'ochre colour ware', without the use of capitals, and name the type site Bahadrabad, Atranjikhera, Lal-Qila or Saipai, with which the pottery agrees most, within brackets.* At Saipai, the association of Copper Hoard implements and pottery is certain, but we are not so certain in regard to Bahadrabad, where some of the Copper Hoard implements may have found their way as a trade commodity. The absence of the likely cult object of anthropomorph at Bahadrabad may have significance in this connection.

My views on nomenclature and culture-contact situations of the OCP are covered by what I have said so far. There is not much to add on origin and diffusion. The OCPs of upper and central Doab, if the former may still be called OCP, have not much in common, and so separate zones have to be postulated for both of them. I

agree with S. P. Gupta (p. 7, above), however, that Copper Hoards have an east to west movement, although I feel that for the present the specialised Gangetic types cannot be related with those in Bihar or further east. It appears that the upper Doab Harappan and Copper Hoard cultures are contemporary, and as such the lower end of the latter could be postulated to *circa* 2000 B.C. Perhaps 2000-1700 B C. would be a tentative workable bracket.

Earlier I had mentioned that some colleagues have linked the OCP with Bara. I am taking this opportunity to clarify the position of Bara, as a result of re-assessment. It is given to many to demolish the edifices erected by others. But I am happy that I have to pull down an edifice that I myself raised and begin construction afresh.

This is, however, with very good reason and for better understanding of the sequence of cultures on the Sutlej and the upper Ganga-Yamuna Doab. I had earlier identified three distinct phases of Harappan culture on the upper Sutlej : Kotla Nihang Khan, as the earliest, Ropar coming next and Bara last, although I pointed out that some of the painted designs of pre-Harappan Kalibangan had a 'family likeness' with those of Bara (Sharma, 1964, p. 9: 1965, p. 133). Currently, I am engaged in studying pottery from Bara. *I find that Bara is a single culture site, with Harappan contacts limited to the upper levels. In the lower phase, the pottery is all non-Harappan (figs 8-10) and pre-Harappan in so far as the tradition in Sutlej valley is concerned.* In the upper phase, the earlier types continue, but there is contact with Harappan traditions. The Harappan pottery is, however, extremely limited (fig. 11), typologically and in quantity, and as such indicates nothing more than a contact. This is substantially different from my earlier interpretation.

I have not yet opened material from Kotla Nihang Khan and Ropar, so that these sites could also be re-assessed. *But I am inclined to think that Harappans were preceded by other folk on the Sarasvati, Drishadvati and the Sutlej. On the Sarasvati mainly were the Kalibangans, on the Drishadvati perhaps the Sothi people, and on the Sutlaj the Bara people.* If the Bara people had some tussle with the Harappans, no definite evidence to that effect is so far available. Apparently, soon both learnt to live together, however. This accounts for occurrence of Bara and Harappan ceramics together from the same levels in the Sutlej valley and the Doab. At Kotla Nihang Khan, 3 km. from Bara, Bara pottery occurs with the Harappan from the lowest levels, but is very small in quantity; at Ropar much more, limited contact with classical pre-Harappan Kalibangan tradition is also discernible in the lower levels of Ropar.

Evidently, this picture is not much different from what we find in West Pakistan, at Amri and Kot Diji, where a pre-Harappan habitation precedes the Harappan.

Bara has common elements not only with pre-Harappan Kalibangan, but also with Amri, Kot Diji and other Baluchistan sites, including particularly Togau and Periano Ghundai. But let me emphasise it, it is the painted motifs and designs that are common and not the shapes. In fact, in painted designs, parallels can be traced further west even to Iran and Iraq.

Apparently, it is the integrated Bara-Harappa folk who moved into the upper Ganga-Yamuna Doab. In fact, they appear to have become one people on the Sutlej itself. I am not aware of even one site on the Sutlej with unmixed classical Harappan ceramics, And, although I have not yet studied the Doab material in detail, it appears to me that there again no site is known exhibiting only Harappan objects without an admixture of Bara elements. As matters stand at present, among sites known to me on the Sutlej and in the upper Doab, Kotla Nihang Khan alone has a high percentage of Harappan pottery.

Whether the common elements between Kalibangan and Bara originate from direct contact or from a common source it is difficult to say at present. The latter possibility has, however, a better case, as the parallels between Bara and Kalibangan are usually limited to painted motifs. Among the six classes of fabrics of Kalibangan (Lal and Thapar, 1965), A, C and E are missing altogether at Bara. The rustication of Fabric B exists, but without painting on it. D alone as a class occurs at Bara, although the type is restricted to troughs and basins. Kalibangan's F is grey or grey-slipped, but Bara's grey ware is neither so fine nor painted, apart from being very limited in quantity.

The integration of Harappans and Bara people appears to have taken place not at or near Ropar, but somewhere downstream and perhaps over a wide region. The sites in Jullundur and Ludhiana districts betray this integration, not excluding Sanghol and Chandigarh, which have been or are being excavated by the Punjab Archaeological Department. Mitathal, district Hissar, excavated by Suraj Bhan (Suraj Bhan, 1969) reveals a similar story, with some variation. It looks also likely that the integration was not only between Harappans and Bara people, but embraced also other contemporary folk, who are yet to be properly identified. In fact, before we succeed in working out the exact nature of this integration, much more field-work is called for.

K. K. Sinha

Presently OCP has been recovered from more than one group of sites. We do not have as yet a corpus of types as known from Atranjikhera, Bahadrabad and

Ambkheri. My own impression is that the Atranjikhera group stands on a different footing in matter of type and fabric than that of Bahadrabad and Ambkheri, where the shapes show a continuity of Harappan tradition.

It is, therefore, apparent that we are dealing with more than one entity of OCP. The usage of a common term OCP for the divergent groups is likely to give the erroneous impression that OCP is a homogeneous type which it obviously is not. I would, therefore, plead for a preparation of corpus of types, and this should be followed by a comparative study. Till then it would be safe to have different names for the different groups. I am inclined to agree with the suggestion of Y.D. Sharma that we should invariably mention the name of the site after the term OCP, e.g., OCP (Atranjikhera) or OCP (Bahadrabad).

R. S. Mittal

I am extremely thankful for the invitation extended to me. I am neither an archaeologist, nor a historian, and therefore, I must express my ignorance of what you have talked about the OCP. With this background, I may inform you that my interest in archaeology arose only in 1962, when the anti-Biotic project at Rishikesh was set up. We in the Department of Geology were asked to investigate the foundations, where the project buildings were to come up. About 300 m. away from the Ganga, at a depth of 3·5 m. we found burnt bricks, measuring 32×38 cm., which were somewhat comparable in colour to red ochre. We requested the Geological Survey of India to pass these bricks on to the appropriate authorities in the Archaeological Survey of India.

The topography of the site is that there is some sort of an island where the river is flowing. If you walk from the water to the plains side, you will find three contours. On the lowest terrace, within 100 m. of water, is situated a temple built with the same kind of bricks which were encountered just below the foot of the hill. Now, I do not know if the bricks are older or the temple.

Geologically speaking, some of my friends think that the desert is moving towards U.P. If you study the deposits, as you travel down from the *Terai* region, you first find rounded stones in the form of boulders. Before you reach coarse sand, you find clay deposits, which may be responsible for some sort of kink in the Ganga in the plains and also in the Yamuna near Delhi. The most important thing is that this area has been affected by floods and quite a number of villages were washed away. The same sort of thing has happened elsewhere. In the year 1880, the river Kali flowed through Nepal by the side of Brahmdeo. It was a very flourishing centre. Today, if

you go there, there is nothing of this name. It has obviously been washed away. *So there appears no reason why we should not accept the theory that certain areas were flooded in the past.*

To return to the problem at hand, take a *surahi* or *ghara.* Keep it for the summer and the rainy season. What happens in September or October ? It peels sometime in September. You can yourself judge when the peeling off of pottery occurs. It is due to weathering. *The OCP's appearance could also be due to similar weathering.*

The next point is Rajasthan desert, which falls in the age group between 12,000 and 15,000 years. If the geography of a sub-continent changes, how is it that the history in the different parts of the country, revealing a fundamental geographical change, is placed only within 5,000 years ?

Now I refer again to those bricks. I am told that they belong to the Kushan Period. The temple may have been built with these old bricks, although a Bengali *Sadhu* told me that the temple belonged to the first century B.C.

M. N. Deshpande (Chairman)

I am glad to find that the discussion has been very fruitful within the limitations of time. I would make a few general comments and then request Shri A. Ghosh to make further observations and wind up the session.

About nomenclature there are two views : one, that the present nomenclature should not be changed and the other that since there are regional differences within the culture, each regional culture may be distinguished and designated separately. I feel that the best way would be to keep the OCP label as it is and add the site name when we are talking of a particular site, for example OCP. (Bahadarabad) or OCP (Atranjikhera).

In my opinion, the OCP (Ambkheri) while sharing the fabric of the correspon-ding pottery from Atranjikhera and Saipai, differs from it in form but on the other hand the assemblage shows certain affinities with the material of western Uttar Pradesh and eastern Punjab. Among the probable links may be mentioned terracotta cakes, terracotta humped bull and a few pottery shapes like the dish-on-stand, bowl-like-lid with central knob, and cord impressed and incised decorated pottery. The influence of Cemetery-H culture is also seen on the pottery (Deshpande, 1965). Dikshit has traced some connection even with Bara (Dikshit, 1969). About the origin and the mature nature of this culture, its development in time and space, more work is

called for. We have to take up the subject seriously. As a first step I would suggest that within the next three months, each one of the excavators, who was responsible for excavation of an OCP site, should give sufficient plates of pottery found by him, with a brief note about the ancillary cultural material. so that we are able to prepare a sort of working paper on the subject, and can further base our conclusion which should be published as a report of the seminar.

To this may be added a few appendices giving bibliography and brief notes on work done by scholars not present here but who have done work on this problem. This will bring out differences in cultural outfit in different regions and it will then be possible to proceed further in determining the question of origin and diffusion.

The other point namely the study of metal technology which Agrawal has put forward is also very important (Agrawal. 1970). The study of the source of copper, if we can trace it—and it may be connected to a certain type of mine—will go a long way. Another thing is that a few more OCP sites should be very systematically excavated under very controlled conditions. Further work at sites like Saipai, and Gadharona is called for. I think some sort of working plan should be prepared, so that universities, the Archaeological Survey of India and State Departments may co-operate and the result should be published as expeditiously as possible.

Certainly more field work and more publication of the material should be accompanied by laboratory work on soil samples. We do not know whether it was one flood, or many floods, or long exposure and transportation of sediments by winds that was responsible for the nature of the cultural deposit one come across in the excavation. All these can be worked out after a series of soil analysis. After all, in this discussions, I feel, we are not groping in the dark Systematic work is bound to place this culture in proper time-sequence and help us in understanding the panorama of cultures of the Gangetic valley. In any case, the discussion has been very fruitful and I thank every one of the participants for his valuable contribution.

A. Ghosh (General President)

It is time for us to take up the next item of the agenda. I would like to make a few observations, though I must admit that very little remains to be said after the most interesting discussion we have had.

We began with an undertone. There was one OCP culture initially. The Chairman then said that there was a Gangetic culture and a Yamuna culture: and Dikshit and Suraj Bhan spoke of groups A and B. Nigam has put in four groups;

Sharma as many as five groups in the Doab. Apart from the superficial texture of the pottery, there appears nothing that has been said about the identity of the culture. We are not sure whether it represented one culture or many phases of one culture or there were several entirely different cultures altogether. Now before we establish an identity, to name a culture is certainly very premature. If we go on ascribing the OCP to Europeans or Assyrians this does not solve the problem. Similarly the name also is admittedly unsatisfactory, in the absence of link. Still, unless some definite and satisfactory solution is found, it is difficult to my mind to change the name. But I would certainly agree with Dr. Sharma that we give up using capital letters for Ochre Colour Ware or Pottery, so that nobody is allowed to believe that we are referring to coloured pottery like red ware without emphasis or any implications, though it is having implications. Addition of the name of the site where it is found may be helpful.

SESSION ON NBP

K. K. Sinha (Chairman)

I am very thankful to the authorities of the Indian Archaeological Society for asking me to take the chair over the session of this seminar on the nomenclature of NBP Ware and other allied issues. As you all know, the need for the present symposium arose as a result of deliberations held at Nagpur during the course of the meeting of the Indian Archaeological Society in 1970. It has been generally felt that the name Northern Black Polished Ware is no longer valid in the present context and that the time has come for changing it. It was against this background that the Nagpur meeting decided to refer the matter for a detailed consideration at a future date. It is now our duty to subject the issue to as thorough an examination as possible.

The NBP is in a better position than the OCP. It is much more widely known, and it is not restricted to a comparatively small region, as is the case with the OCP. We are fortunate in having Shri A. Ghosh here with us to guide the proceedings. He was associated with the excavations at Ahichchhatra in the early forties, and the article on the pottery from Ahichchhatra published by him jointly with K. C. Panigrahi, featured for the first time the occurrence of the NBP Ware (Ghosh and Panigrahi, 1946).

As the one charged with the burden of initiating the discussion, I deem it my duty to present before you both sides of the picture, i.e., arguments favouring a

change as well as those which favour a *status quo*. It will be up to the members present here to decide one way or the other. Arguments favouring a change are fairly well known. One of the familar jibes is that it is neither 'northern', nor 'black', nor 'polished'. The ware is no longer confined to the Gangetic plains and has been reported from several sites in central and western India and is known to have occurred at Amaravati in Andhra Pradesh In the face of this evidence the term 'northern' loses its validity. Similarly, it is said that the term 'black' does not do full justice to a ware which occurs in shades other than black. As for the term 'polished', it is generally agreed that the lustrous surface of the ware was not achieved by polishing, and hence the term 'polished' is a misnomer. In short, we have gone a long way since mid-forties when the ware was given its present name. On the present reckoning, therefore, the ware needs to be given a name which may more appropriately reflect its changed status acquired as a result of field-investigations over the past two decades.

When we proceed to change a term like the NBP, which has been in use over a long period, one of the questions that we have to face is how easy it will be for a new term to gain currency. If we are to be faced with a situation in which both the old and new terms are being used concurrently, you will agree that this will lead to an avoidable confusion. In this context, I have been urged by some of my friends the instance of the decision some years back to change the terms Series I, Series II and Series III to Early Stone Age, Middle Stone Age and Late Stone Age. I concede that no such difficulty has been experienced in the implemention of the changed nomenclature of the Stone Age industries. At the same time, we have to realise that the study of the Stone Age industries is confined to a fairly restricted number of scholars and the acceptance and usage of a modification in terminology does not present any difficulty. As against this, the NBP Ware, a cardinal artefact of the early historical period, has been with us for well over two decades and a changed label is not likely to find a universal acceptance. But this certainly cannot be turned into an excuse for retaining the term If we decide to change the term, each one of us here present, I am sure, will do his best to get as wide a currency for the new term as lies within one's means. It is at this very moment that I urge you to look at the other side of the picture and let us ask ourselves : 'is the case for retaining the present name defenceless ?' It is in the context of this question that I am making a few observations.

We shall first take up the question of geographical limit imposed by the term 'northern' It is true that the ware has been reported from several sites in central and western India and from the Deccan. At the same time we cannot lose sight of the fact that outside the Gangetic plains, there is not a single site which has yielded

the NBP Ware in any considerable numbers. Except perhaps Ujjain, where the ware has distinctly an inferior quality as compared to its counterparts in the north, the ware is reported to be restricted in numbers everywhere in central and western India. Those of us who have had the experience of working on sites like Sravasti, Kausambi, Vaisali, Rajgir and Rajghat are struck by the dominating position of the NBP in the contemporary levels both in regard to numbers and shapes. This position is in marked contrast to the one noticed on sites south of Vindhyan plains, where its occurrence in insignificant numbers had led scholars to suspect that the ware might be an import from the Gangetic north. That the ware originated in the middle Ganga plains has never been in doubt. If, therefore, we take into account the origin and major centres of dispersal of the ware as our guidelines, is there any harm in retaining the term 'northern' ? This is the question that we have to decide.

As stated earlier, doubts have been raised about retaining the term 'black' as the ware has been known to have occurred in a variety of shades other than black. Here I may be permitted to draw upon my experience of working on the collection of NBP from my dig at Sravasti. I am in a postion to state that more than 80 percent of the specimens were quite definitely black. This, I believe, will be true of other sites as well. On this reckoning alone, there does not appear to be any justification for doing away with the term 'black'.

At this point, I should also like to draw your attention to the fact that many specimens of the variations in colour may not be intentional. There are three categories of colour variations :

i. Intentional black or other colour,
ii. Accidental non-black, and
iii. Intentional non-black.

I have no hesitation in stating that quite a substantial percentage, perhaps more than 80 percent of the total collection of the NBP, comes under the first category. This would leave only an insignificant minority of specimens which might have been intended to be non-black. Colour variations ranging over deep black, steel grey, blueish black and blue burnished black, can result from kiln conditions. I have, thus, no doubt in my mind that in dealing with the NBP, we are dealing with an essentially black ware, whether we call it Northern Black Ware or Indian Black Ware. The term 'black' need not be changed.

Finally, we come to the term 'polished'. The term is misleading inasmuch as we know that the surface lusture of the NBP was not achieved as a result of polishing. Although many investigations have been carried out, so as to determine the nature of

the surface lusture, no satisfactory explanation has as yet been possible. While I do not particularly favour retaining the term 'polished', I do wish to make a plea for having some term which could distinguish the NBP Ware specimens from many others which are very near to NBP in every other respect except for the shining lusture. Howsoever imperfect the term 'polished' may be, it does give an indication of the resultant effect as distinguished from the 'cause'. In the absence of a substitute which has to await a final verdict from the chemist on the nature of the surface lusture, the word 'polished' may continue to serve the limited purpose, though very imperfectly indeed.

It is for you all to decide whether we wish to change the name or maintain the *status quo*. If we decide to do away with the existing name, our next task will then be to find a substitute name.

Evidence from Sravasti and Ahichchhatra, and in an indirect way from Atranjikhera and Alamgirpur, confirms that there was a stage of overlap between the Painted Grey and NBP Wares. I think it will be a good thing if this gathering were to affirm this position categorically, since the impression still persists that the NBP succeeds the PGW without an overlap anywhere in the stratigraphic sequence of the Gangetic north. In this connection, I wish to draw your pointed attenion to a paper by me entitled 'The NBP Ware—Fresh hypothesis in the light of Sravasti evidence—' presented at the seminar on potteries in ancient India held under the auspices of the Patna University (Sinha, 1969).

I may repeat for the benefit of you all very briefly some of the salient points in regard to the stratigraphy and chronology. The NBP Ware cannot by itself be regarded as a safe datable criterion, as it is known to have occurred in widely differing contexts. This is important, since still excavators continue to depend on the mere occurrence of NBP specimens for the dating of levels. Among the sites where NBP has a definitely earlier datable contexts are Rajgir, Vaisali, Rajghat, Sravasti, Kausambi and Taxila. Here it belongs mainly to a date bracket of 550-250 B.C. Sites like Hastinapur, Charsada, Kumrahar and perhaps Ropar and Ujjain belong to a later date bracket (350-150 B.C).

The question of diffusion is not easy to answer particularly at this stage of our knowledge, when not much is know about pre-NBP deposits in eastern U.P. and Bihar. A few relevant observations may be made in this connection. On the basis of the present evidence, the main productive region of the NBP is formed by a rough rectangle whose western arm is formed by a line joining Vaisali and Rajgir. It was in this region that the NBP Ware originated and we also notice the occurrence in lowest

levels of the most representative specimens retaining in full measure the brilliant lustrous surface. The question as to how did it all happen is not easy to answer. If the pre-NBP deposits in the region do not hold the answer, the possibility of a diffusion cannot be ruled out.

While considering the question of diffusion, I wish to draw your attention to points of similarity between PGW and NBP Wares. The highly striking surface lusture of the NBP tends to obliterate the points of apparent similarity between the two wares. There is a near identity of shapes between the two wares; the core is grey in both the cases and thinness of the body is a feature common to both. The difference between the two appears to be confined only to the surface treatment—the painting of the PGW giving way to the lusture of the NBP Ware. As the PGW had an earlier history in the region;, the possibility of a wholesale diffusion is at once ruled out. A partial diffusion of technique resulting in the surface lusture of NBP is all that we can think of. I am not in a position to elaborate it any further in view of the paucity of evidence.

Y. D Sharma

Although the NBP is not an accurate description for the ware denoted by it, its continued use creates no confusion in identifying the particular ware, and as such I do not see any necessity for changing the nomenclature now.

That there is an overlap between the PGW and NBP is also borne out by my small-scale excavation at Khalaua, district Agra, where a single NBP sherd occurred in an upper horizon of predominantly PGW levels.

Dr. Sinha's placement of Ropar in the later date bracket (i.e., 350-150 B.C.) runs counter to a C^{14} date obtained from lower levels of the NBP period. On the basis of 5730 ± 40 as half-life of radiocarbon and assuming 1950 as the 'present' year, it works out to 485 ± 100 B.C. Thus even if we agree with Dr. Sinha in assuming two contexts for the NBP, the Ropar NBP would appear to go with his earlier context.

N. C. Ghosh

There is a phase of NBP which is free from the PGW as clear from excavations at Purana-Qila and Hastinapura. In the western part of northern India, PGW dominated, whereas in the eastern part the NBP occupied a similar position.

The origin of the NBP should be searched somewhere in mid-eastern India, around Pataliputra. At Chirand, in the upper phase of the chalcolithic culture, i.e., in Period II, there is a highly polished black ware reminiscent of the NBP, and this could be the precursor of the NBP.

From east the NBP travelled west, whereas the PGW penetrated from west to east. This resulted in an overlap of the two wares at certain sites.

R. C. Gaur

Though the C^{14} dates now available to us for the NBP range between second to fifth centuries B.C., an earlier antiquity of the industry is also possible on the basis of stratigraphic study of the NBP deposits at Kausambi (Sharma, 1960), Sravasti (Sinha, 1967) and Atranjikhera (Gaur, 1968; 1969). It may be possible that while the pottery flourished as a developed industry from fifth century B. C. onward, its manufaturing started on experimental basis long ago, probably a century or even more earlier. This assumption needs a careful study, particularly at such sites which have the NBP and the pre-NBP deposits without any break. It may also be possible that the industry might have been introduced by the potters at a site in the PGW area, where iron was already in use, and later on after its 'know-how' spread, it flourished at its known epicentres located in the region of the iron-fields. However, this suggestion is absolutely hypothetical, since the emergence of the NBP from the black-slipped ware, an earlier pottery of the NBP region, is also plausible.

On Sravasti and Atranjikhera evidence the NBP period may broadly be divided into two phases: (i) pre-Mauryan, and (ii) Mauryan. The excavator of Sravasti has classified them as (i) pre-structural, and (ii) structural.

However, at Atranjikhera on material evidences it may be termed as belonging to (i) pre-defence, and (ii) defence deposits. This nomenclature became necessary for Atranjikhera deposits, since a large number of iron objects occurred in the earlier phase which evidenced structural activity. Moreover, properly laid-out bricks were also encountered in this phase occasionally, although on the whole the structural activity in this phase was of an insignificant nature.

D. P. Agrawal

Literally speaking, the NBP is a misnomer. But by association it has assumed the sanctity of a name for the ware we know as the NBP. Changing a name at this

stage would, therefore, add to confusion. We should instead address ourselves to more important problems concerning the NBP.

The C^{14} dates have clearly shown that the PGW has a time-spread of 800-400 B.C., whereas the NBP shows 550-50 B.C. bracket. It is obvious, therefore, that ereht was an overlap between the two wares from fourth to sixth centuries B.C. It is further borne out by the common red ware shapes that are associated with the NBP in the eastern sites and with the PGW in the western Doab. It would make a very interesting study to go into the changes of the associated wares and other repertoire of the NBP as it spread westward, and of the PGW as it advanced eastward.

The apparent affinity of the NBP and the PGW is due to the use of the same fine alluvial clay of the Gangetic valley. Otherwise, the PGW is western in origin and is a painted pottery tradition with controlled firing to achieve a grey colour of the ware. The NBP, on the other hand, is largely unpainted and has a very distinctive gloss. In their origins both the wares should have distinct identities. Only in the overlap phase could they have influenced each other.

The NBP is distinctively a pre-Mauryan ware. There is a concensus that its origin is eastern. Its epicenter was perhaps Bihar, and it may mark the spread of abundant Bihar iron and consequent colonisation of the wooded Doab in the fifth-sixth centuries B.C.

The distinctive gloss of the NBP has yet to be clearly understood. Hegde thinks that it is due to the use of *Sajji* soil (Hegde, 1966), whereas Dr. B. B. Lal holds that the gloss was produced by putting the hot pot into an organic solution (Lal, 1955-56). The British Museum has given a different view (1959). A concerted work in this direction and convincing reproduction of the gloss in the laboratory will alone solve the mystery of the NBP.

S. P. Gupta

In the Nagpur conference of the Society, Professor Haertel voiced his concern over the continued usage of the term NBP for a ware which, as we now know, was confined neither to northern India, nor to black colour; in fact, it was not polished either. On being asked as to what new term he would like to give to the ware which we have been calling for decades as the NBP, he left the matter to be decided by Indian field-workers.

We all know that an anomaly between the term and the actual character of the ware has existed for long; but we have never been able to replace the term by a new

one. To me it appears that there has been a fundamental fallacy in our approach. We have been taking the NBP Ware as a single homogeneous ware produced out of a single technique and comprising a single set of pottery types. I am afraid, this may not be the case. The excavations at Sravasti, Kausambi, etc., have clearly brought to light a number of wares which are associated with the NBP. Although some of these wares are of different shades of red colour, they are as shining as the black wares. Some of these wares bear paintings of different designs produced by different techniques. Obviously, we cannot remove these wares from the fold of the NBP Ware. It appears that the term NBP has outgrown its limits. It is now a big umbrella under which not one but several wares are protected. How can, therefore, any one suggest a single term that may justify the existence of all these wares ?

I, therefore, feel that we do not have many choices; either we retain the term on pragmatic grounds, or we evolve several terms, one for one ware. Since evolving several terms for the NBP Ware complex is too hazardous to be undertaken, I plead for the retention of the term.

M. C. Joshi

The problem of the NBP is not to be studied in isolation as has often been done. The origin and spread of this *de luxe* pottery should be examined in relation to the contemporary metal wares and the trading conditions between the 6th and 2nd centuries B.C. It may be examined whether the disappearance of the NBP was on account of the production of better and cheaper metal utensils. Further, the zonal distribution of the NBP and its associated pottery should also be cerefully studied, in order to check as to in how many cases it was continued to be manufactured in the post-Mauryan times.

It is also desirable to take into account the contemporary literary data in this regard, especially the reference to pottery-making, metallic sound of the earthenware (*Vinaya Pitaka)*, use of slip, burnishing (*Upadi Sutta)*, etc. In this context I would like to refer to Halahala, a woman potter of Sravasti around the 5th century B.C., who is described as a patron of the Ajivaka sect in Pali literature. Does this reference not indicate the prosperity of a potter's family (which was rich enough to patronize a growing non-Brahmanical sect), in the early phase of the urbanization in the Madhya-desa and adjoining areas ? Could we not infer therefrom that the material prosperity of a potter might have depended around the 5th century B.C. on the production of *de luxe* wares like the NBP and its growing demand in the market ?

M. N. Deshpande

The PGW and NBP co-exist for a long time at a number of sites but we must find out when exactly the NBP comes into the picture and when the PGW stops occurring. This is a very crucial point. We do not find prolific use of iron tools in the early levels of PGW. However, NBP ushers a full-fledged use of iron coinciding with the grand emergence of early historical townships with various structures of burnt-bricks and cut timber. The needs of the rich and sophisticated section of the society gave birth to this *de luxe* pottery which may have also been used by religious teachers. Buddhist monks could have perhaps used this pottery; especially the bowl, as could be surmised from the find of this pottery at Buddhist establishments, the southernmost being Amaravati in district Guntur.

As regards surface treatment, it is not only black-polished, but there are also various other shades with the gloss giving golden or silver shine and a few vessels painted with lines on a shining surface. It would be of interest to study if the wares made in this manner served any particular need, e.g., to store acidic substances or other materials.

I feel that the old nomenclature certainly should continue, for the few sherds we get outside northern India were evidently transported there from northern India.

K. N. Dikshit

The NBP ware which was first discovered at Taxila, is essentially the pottery of northern India, although it has been found as far south as Amaravati and Karad. However, a change in nomenclature will create confusion.

The Tata Institute of Fundamental Research, Bombay, has published a number of C^{14} dates of NBP levels, but nowhere the early date has gone beyond 530 B.C. At places, the PGW has been found in the NBP horizon (e.g., Ahichchhatra, Allahapur, Atranjikhera, Ropar, Bairat, etc.). The upper levels are dated to 50 B.C., and even A.D. 130. As most of the early C^{14} dates are round about 400 B.C., I shall like to assign the NBP time bracket between 400 and 50 B.C.

Dr. K. K. Sinha is of the opinion that there are certain primary centres of NBP distribution. He keeps Taxila, a trading centre, in the list of primary centres. I do not know how Dr. Sinha has kept Taxila in the list of primary centres and weeded out other sites of the region also falling on the trade-route connecting Magadha with Balkh (*Uttara-path*). The NBP settlements at Ropar, Indraprastha, Hastinapura and Ahichchhatra cannot easily be separated from Taxila. The presence of Asokan inscriptions in Delhi and in its neighbourhood are clear indication that this area was in close contact with the imperial power at Magadha. In my opinion the whole of north-western India (now Pakistan), including eastern Panjab and western U.P.,

should come under the list of secondary centres as the NBP seems to have spread in this region with the expansion of the Mauryan empire.

K. K. Sinha (Chairman)

I have now to wind up the discussion. That there was an overlap between the PGW and the NBP is accepted, but the duration of the overlap is not clear. The general feeling is for retaining the present nomenclature.

I have taken two clear stages within which the NBP occurs. The monumental architecture, to which M. N. Deshpande has made a reference, belongs to the later stage. Even at Kausambi and Rajghat well-built structures do not occur before 300 B.C.

To my mind, the PGW and the NBP are very close to each other. With the PGW occurs a black-slipped ware, which is technologically not far from the NBP. Even in point of shapes and varieties, the PGW and the NBP look to be related. I think we can go a long way if both PGW and NBP are subjected to chemical examination and their relationship, if any, worked out.

A. Ghosh (General President)

We had a most interesting and controversial discussion in the afternoon as in the morning. There is a consensus of opinion that no change in the nomenclature of the NBP is called for. The overlap between the PGW and NBP has been established by several excavations, and there are no two opinions about it. Dr. Sinha has stated that there was no break between the two cultures represented by the PGW and the NBP, and I think that this is very logical. About the diffusion of the NBP, to my mind, it is quite clear. At Taxila, as far as I recollect, only 27 sherds of the NBP were found; at Kausambi, in the NBP levels, 50 percent of the sherds belonged to the NBP class. Therefore, its diffusion from eastern U P. or Bihar is very clear. It has been very rightly pointed out that some advance work has been done regarding its manufacturing technique, but no concentrated research work. This must be attended to. What I feel is that whatever its technique may have been, it must have been very sound. Otherwise, it would be difficult to explain its uniform quality over a large area.

We have covered quite a lot of ground both in the morning and in the afternoon. We may now look forward to see our deliberations in print. Before we disperse, I must thank the Indian Archaeological Society very much for asking me to be present here and preside over today's deliberations.

APPENDIX A

SALVAGE OF ARCHAEOLOGICAL EVIDENCE FROM BAHADRABAD

Y. D. Sharma

In 1951-52, at Bahadrabad, 12 km. west of the headworks of the Ganga Canal at Hardwar, a diversion channel had to be dug up for siting an hydro-electric power-house. The excavators reported the occurrence of some red pottery from considerable depth. On request, they forwarded a few fragmentary sherds to the Archaeological Survey of India, New Delhi. But these could not be identified at the time. Some time later, I thought of examining the site personally, and when I reached there, I was shown a small hoard of copper objects said to have come from the same level as the pottery earlier reported (Krishnaswami, 1953; Sharma, 1961, 1964). I was also able to collect some more pottery from the earth thrown up by the excavators. The Copper Hoard and the red ware made clear sense, as the latter appeared to fall in the same category as the ochre-coloured ware reported earlier by B. B. Lal from Bisauli, Rajpur Parsu and Hastinapura (Lal, 1951; 1954-55). I decided, therefore, to cut down the banks of the diversion channel and salvage such evidence of the cultural strata as was still *in situ*.

Several trenches were laid out at right angles to the channel-bed on both sides of it. After cutting through a thickness of 5.70 m. of alternating sterile layers of sand and pebbles, I struck the familiar red ware. On an average, the occupation layer, consisting of water-soaked compact dark brown clay, measured 0.60 m. in thickness. No copper object came to my hand during these operations, but immediately above the natural soil on the southern flank of the channel lay some quarzite flake tools and waste flakes (Krishnaswami, 1953). Their number is extremely small, and the fact that they occurred only along the lower fringe of the pottery-bearing levels, indicated that they must have been lying there before the arrival of the pottery-using people. V. D. Krishnaswami opines that this industry "belongs to a flake tool complex assignable to two broad facies : (i) cleaver-chopper made on a mammoth lunate reminiscent of a microlithic lunate; and (ii) a jagged wavy-edged scraper formed by a different technique as revealed in the Early to Late Sohan industry".

The pottery is generally thick, soft and, although made from medium-grained well-levigated clay, it shows the addition of fine or coarse sand as *degraissant*. Its colour varies between bright red to terracotta buff, although some pots are fired to a grey colour. Originally it was covered with a thick slip, which stuck to the lumps of clay or peeled off as soon as sherds were extricated from them. With a worn-off

surface, the sherds have a rolled appearance. Perhaps 'ill-fired' or 'inadequately fired', as described by me earlier, is not a correct description of the pottery, as it is generally well-burnt. No painting was noticed, and if there were any, they must have gone with the slip. A few sherds had, however, wavy incised decoration, or notchings on cord pattern along the belly. A looped handle was also noticed.

Among the principal pots (figs. 13-14), classified according to use and shape, are jars (nos. 8, 17, 17a, 17b, 17c, 19, 20), vases (nos. 5, 22, 23, 23a 24, 25, 26), bowls (nos. 18, 18a, 19a, 21, 21a, 21b, 27, 28, 29, 30, 31, 32, 33), basins (nos. 4, 4a, 4b, 4c, 4d, 14, 14a) dishes-on-stand (nos. 1, 1a, 7), pedestalled bowls (nos. 3, 3a), a small ring-stand (no. 2), lids with a central knob, (nos. 6, 6a) and small cups or saucers (9, 10, 11, 12, 13).

The problem is, culturally, where does this pottery fit in ? Its association with Copper Hoard objects, although based on surmise and not physically observed by a trained archaeologist, makes us turn naturally to known Copper Hoard sites. Specialised Copper Hoard implements, including harpoons, had been reported from Bisauli and Rajpur Parsu, but pottery excavated there was too fragmentary to produce any definite shapes. From Hastinapura, no copper tool from the OCP level is reported and the pottery shapes recorded from there (fig. 5; Lal, 1954-55), are absent at Bahadrabad. With OCP shapes from Atranjikhera (fig. 6; Gaur, 1967, 1969-2), correspondence, even though not complete, is limited as shown below :-

	Shape	Bahadrabad	Atranjikhera
1.	Narrow-necked jar with flaring rim	Fig. 14, nos. 17, 17b	Fig. 6, nos. 1-2; Gaur, 1969.
2.	Deep bowl with slightly out-covered rim	Fig. 14, no. 33	Fig. 6, nos. 9, 10; Gaur, 1969.
3.	Small lid or bowl with flaring sides and thinning rim.	Fig. 14, no. 32	Fig. 6, no. 11; Gaur, 1969.
4.	Loop handle	Fig. 13, no. 16	Fig. 6, no. 18; Gaur 1969.

There is also at Atranjikhera base of a stem taken to be that of a dish-on-stand, but its features are different from those of Bahadrabad. The notched and incised designs from Atranjikhera do not belong to the same pattern and technique as those from Bahadrabad. Besides, it has also yielded painted pottery, which has not been

noticed at Bahadrabad. Largely, therefore, Bahadrabad, and Atranjikhera follow different ceramic traditions.

With Lal-Qila (fig. 7) Bahadrabad has practically nothing to compare among specialised features. The same applies to Baharia, district Shahjahanpur (pp. 42-3; fig. 16) and to Noh, district Bharatpur (pp. 43-4; fig. 17).

Saipai, (Thapar, 1970; Lal, pp 47-49 figs. 19-20), which has the unique distinction of having yielded a hooked spearhead, harpoon and plain and painted pottery in a systematic excavation, again does not offer any parallels with Bahadrabad in specialised pottery shapes. The only shapes from Bahadrabad which are broadly comparable are narrow-necked jar, with out-curved flaring rim (fig. 14, nos. 17, 17b), vase with beaked rim (fig. 14, no. 24), bowl with thickened but inwardly inclined rim (fig. 14, no. 21) and bowl with out-curved rim (fig. 14, no. 33). A fragment taken to represent the stem of a dish-on-stand is rather dubious.

The net result of the above examination is that Bahadrabad pottery as an assemblage does not tally with known Copper Hoard or OCP sites. It has, however, some parallels in shapes with Bara and certain Harappan sites (fig. 15). Among such shapes are dish-on-stand, pedestalled bowl, lid with central knob, basin with heavily beaded and undercut rim, open based and internally incised basin, small ring-stand, bowl or dish with splayed out rim, globular jar with narrow neck and splayed out rim and vase with long and flaring neck and thickened rim. A jar with a flange below the rim also occurs, but the flange, has a smaller diameter than the mouth and may, therefore, be purely ornamental and not intended to receive a lid as in the Harappan vessel.

The correspondence of Bahadrabad pottery with that of Harappan sites, particularly in the upper Doab led me earlier (Sharma, 1961) to the opinion that the so called ochre-washed or -coloured ware was only a phase of Harappan ware. Later (Sharma, 1965), I felt that the Harappan affinity of Bahadrabad was not so firm. A look at the comparative chart (fig. 15) will show that Bahadrabad's correspondence with Bara is closer than that with Harappan sites.

In this connection, I am tempted to point out that although pottery from Lal-Qila as an assemblage, is different from Harappa or Bara-Harappa complex, certain features do show parallels with Bara pottery. Among these are a vase with a concave neck, lid with splayed out rim and dish with drooping rim. Also comparable are painted motifs like cross-hatched triangles, needled long arch and juxtaposed curved motifs. Among incised designs a parallel is offered by a freeze of hooked sigmas. It is possible, therefore, that more than one tradition go in the make-up of Lal-Qila, and some of these may be that of Bara. Located as it is within the upper Ganga-Yamuna

Doab, it falls within the zone where Bara-Harappa ceramic traditions are clearly discernible.

Where does all this analysis lead us to ? Bahadrabad pottery, considered as a whole, does not fall in the Bara-Harappa complex of the upper Doab represented by Alamgirpur, Ambkheri or Baragaon. It does not tally with Lal-Qila, which exhibits a partial correspondence with Bara. Also with central Doab sites like Atranjikhera and Saipai it shows no direct connection. It appears to possess, however, some relationship with Bara-Harappa complex, even though it is limited and rather remote.

How it it then that a Copper Hoard is found associated with this pottery ? It is quite possible that the Gangetic Copper Hoards were a common property of several people whose ceramic traditions were different from each other. It is also possible and perhaps rather likely, as hinted by me earlier (Sharma, 1965) that we have not yet identified the manufacturers of Copper Hoards. They may be wandering craftsmen like the present-day *gadul lohars* moving their camps in carts from place to place over long distances, and these craftsmen may have supplied the implements to contemporary folks with different ceramic traditions, but common means of livelihood and comparable economic stage of development.

This will also make it easier to explain the occurrence of a fragmentary anthropomorph at distant Lothal (Lohuizen, 1960). For the present apparently we do not have adequate evidence to think of a common Copper Hoard people or culture *on the basis of pottery*, and we must encourage the spade to throw up more clods of earth before the story can be cast in a reasonable frame.

APPENDIX B

EXCAVATIONS AT BAHARIA, DISTRICT SHAHJAHANPUR

G. R. Sharma

The chance discovery of two Copper Hoard implements (pl. I) had been reported from Baharia, about 51.5 km. south-west of the district headquarters of Shahjahanpur. In order to ascertain the nature of the deposit and to establish the relationship, if any, between the Copper Hoard and ochre-coloured pottery found on the surface, a small trial trench, 1. 21 m. sq. was laid out near the find-spot of the Copper Hoard. The excavation was conducted by the Allahabad University. The natural soil was struck at a depth of 1 m. The total habitational deposit was constituted by three layers: Layer (1), 25.4 cm. thick, was composed of hard brownish

clay. Layer (2), with a thickness of 45.72 cm., was pale brownish and sandy, while layer (3) with a thickness of 30.48 cm. was dark brownish, imperceptibly merging with the natural soil underneath. On enquiry it was learnt that the copper implements were found at a depth of 91.4 cm. below surface, probably the actual spot falling in layer (3).

A few pot-sherds, mostly pale red, having a tendency of rubbing off easily, were found sporadically distributed in all the three layers. In some cases the sherds bear a white encrustation, as a result of which the nature of the slip employed thereon has become obscure. However, in some cases the traces of a dark ochrous slip are visible. Among the types (fig. 16) particular mention may be made of ( ) vase with beaded outer rim and concave neck, (2) vase, presumably globular, with flared rim, having a shallow depression on the interior and short constricted neck, (3) vase with splayed out featureless rim, and (4) vase with out-turned externally beaded rim.

The two copper implements, a harpoon and a new type of sword, were obtained from this site while digging clay for preparing bricks. The harpoon, measuring 27·5 cm. in present form, is well preserved and a fine specimen of the type. It has a prominent medial rib and tapering blade, only broken at the tip-end. The middle portion has two pairs of incurved barbs of cylindrical section. The junction of the barbed portion and the tang has been marked by the presence of two knobs, the right one being perforated, evidently for passing a cord. The implement has been made by casting. The sword measuring 45.48 cm. in length, represents in itself an altogether new type in the assemblage of copper implements discovered so far. Like the harpoon described above, it has also got a prominent medial rib and tapering blade. The junction of the blade and hilt is characterised by the presence of a pair of barbs of flat section. From the end of the hilt emanates a hook, evidently made for strengthening the grip. The specimen is undoubtedly the result of casting, though hammering seems to have been done on the hilt and the hook subsequently for finishing them.

APPENDIX C

THE DISCOVERY OF OCHRE COLOURED POTTERY FROM NOH, DISTRICT BHARATPUR

Vijaya Kumar

So far OCP was reported from Hastinapura, Bahadrabad, Ambkheri, Bargaon, Atranjikhera and Ahichchhatra. In Rajasthan, it fell to the lot of Shri R. C. Agrawala,

Director, Archaeology and Museums, to discover it in 1963-64 at Noh, in district Bharatpur (Agrawala, 1967), which is the western limit of the distribution of this pottery (fig. 1). In 1964-65, the present writer took up an area of 12 m. by 15 m. in the OCP levels and noticed that it occupied a separate horizon just above the natural soil and below the black and red ware levels (Vijaya Kumar, 1969). From 1966-67 to 1970-71 each year an area of 5 m. sq. was dug in these levels. The excavations confirmed that OCP constituted Period I of the site.

The date of this pottery has been roughly estimated as 1300 B.C. This estimate is based on two C^{14} dates from the mid-levels of the PGW period (Period III), falling in the 9th and 7th centuries B.C.

The OCP sherds occupy a 0.90 m. thick deposit of brownish clay. Apart from fragments of handles, vases, a basin and a bowl (fig. 17), no complete shapes are available. The sherds are orange to deep red in colour. They are wheel-turned, porous, fragile and treated with a wash. Most of the sherds are thick and the edges rolled.

The range of decoration comprises two varieties, namely, (i) incised, and (ii) applique. Applique type, has a solitary example (no. 4). The incised decoration (no. 2) is similar to that of Atranjikhera. No other finds have been obtained from this deposit till this date.

APPENDIX D

SISWAL: A PRE-HARAPPAN SITE IN DRISHADVATI VALLEY

Suraj Bhan

The excavation at Amri by N. G. Majumdar in 1929 (Majumdar, 1934) for the first time provided stratigraphical evidence of a culture ante-dating the Indus or Harappa civilization. A similar pre-Harappen substratum was discovered at Harappa in 1946 (Wheeler, 1947) and at Kot-Diji in 1955 (Khan, 1958, 1965). The excavations at Kalibangan in the sixties (Lal and Thapar, 1967) have furthei extended the geographical and cultural horizon of the pre-Harappan culture complex making it more and more necessary to investigate the nature and extent of the pre-Harappan cultural mileu in northern India.

In 1968 the excavations at Mitathal provided stratigraphical evidence for the evolution of pre-historic cultures of the Sarasvati basin from pre-Harappan to late Harappan times (Suraj Bhan, 1969). Mitathal I provided typological ceramic similarities with Kalibangan I, but the two also differed. In the former

the ware is rather sturdy, shapes and painted designs scarce and the use of white pigment absent on painted designs. Also there are no microliths. Further, the occurrence of a few Harappan types, like beaker, dish and terracotta cakes suggested a contact of this phase with the Harappans, necessitating thus the investigations if there existed a true pre-Harappan horizon comparable with Kalibangan I in this part of the country. Siswal, where both Kalibangan I and Mitathal I wares were found on the surface, suggested a possibility of throwing light on this aspect. As a consequence, a small exploratory trench was sunk at Siswal during the autumn of 1970.

The village of Siswal (lat. 29.10′N; long. 75.30′E) is located at a distance of 26 km. west of Hissar, district headquarters in Haryana State. It is approached by road from Adampur Mandi, a railway station on the Rewari-Fazilka section of the Northern Railway, about 3 km. to the north.

The site lies about 300 m. to the north of the village along the left bank of the now deserted Hissar Major or the Chautang canal. It is a low mound, 12.5 m. high, covering approximately an area of 300 by 200 m. The site is under cultivation and its north-eastern portion has been much disturbed having been converted into terraces for cultivation. South of the site thick river sand is met with in the wells or borings suggesting the existence of an old bed of the river Drishadvati. The depression demarcated by sand dunes on sides, runs along the Chautang Canal in a meandering way and is easily identifiable along Bhadra-Sothi alignment in Rajasthan.

The trench at Siswal measuring 2 m. sq was sunk in the western part of the mound. It was dug to a maximum depth of 1.90 m. It yielded 1.25 m. thick habitational deposit above the natural soil, which consisted of yellow silt or alluvium containing a good quantity of *kankar* in the lower levels. In all, five habitational layers were discerned in the cutting.

On the basis of the pottery recovered from the excavations (fig. 18), the cultural sequence at the site is divided into two phases, A and B. Phase A, confined to layers (2) to (5), is characterised by the presence of Kalibangan I ware, including white paintings in addition to black over red and internally incised troughs. Phase B is distinguished by more evolved, rather sturdy, shapes, paucity of types and designs and the absence of the use of white pigment. This phase corresponds with Mitathal I. With this phase are perhaps to be associated a few Harappan shapes recovered from the surface of the mound.

Siswal has yielded all the characteristic fabrics of Kalibangan I culture from A to F (Lal and Thapar, 1965). In addition, a few sherds of coarse red ware and a

single sherd of black-and-red ware were also recovered. The industry shows a clear trend of evolution in typology in the upper levels.

All pottery is wheel-made. Fabric A consists of medium to coarse red ware turned on slow wheel, potted irregularly, thin to medium in thickness, fired to grey or red core and painted with black or chocolate designs over matt red surfaces ranging from light red or yellowish to pinkish red colour. White pigment has been used in a number of designs as second colour to give a bichrome effect. The main shapes include vase with short everted, out-turned or out-curved rim, bowl with convex or tapering sides and featureless, flat or out-turned or everted rim, bowl or dish-on-stand, handled vase and perforated jar. The ware corresponds to Fabric A of Kalibangan I. Fabric B is a medium to thick red ware of medium fabric. It is well fired and its lower surface is rusticated, sometimes with finger marks producing parallel ridges. The ware corresponds to Fabric B of Kalibangan I. Fabric C, corresponding to C of Kalibangan I, is better potted and is treated with red slip, over which it is painted with black designs. Fabric D is characterized by a thick, sturdy, red. wheel-turned, well-fired pottery. The troughs are decorated with incised designs on the interior, as in Fabric D at Kalibangan. Fabrics E and F are rare at Siswal and cannot be distinguished from other fabrics but for the colour of the pots as at Kalibangan.

The finds collected from the surface of the site included terracotta triangular cakes, discs with tapering sides, oblong sling balls and beads and bangles painted with black pigment. A large saddle quern of stone, rubber stone and a wedge-shaped burnt brick constituted the other finds. No microlithic blades or copper objects were found.

The author has carried out explorations along the dry beds of the Sarasvati and Yamuna in Haryana (between lat. 28° 50′ and 30°. 50′ N and long. 74° 35′ and 77°.20′E), an archaeologically strategic area for understanding the matrix of prehistoric cultures of the Indo-Gangetic divide and the Ganga-Yamuna Doab. The explorations revealed 95 sites ranging between pre-Harappan and late Harappan periods. The Siswal wares were picked up at 48 sites in the above mentioned river valleys, covering an area from Sarangpur (Suraj Bhan, 1967), near Chandigarh, in the north to Tigrana near Bhiwani in the south and from Rukhi near Rohtak in the east to Bani near Sirsa in the west (fig. 20).

APPENDIX E

A NOTE ON THE EXCAVATION AT SAIPAI

B. B. Lal

Scholars have long been familiar with the occurrence of copper tools, commonly known as Copper Hoards, in the Ganga valley, with some extension to the south of

that valley. At no place, however, were these tools found in a regular excavation. It has, therefore, always been a matter of debate as to what kind of pottery and other artefacts went along with the Hoard.

The excavation at Saipai in district Etawah, Uttar Pradesh, has placed. for the first time, these Hoards in a proper archaeological context, thus settling at least a part of the controversy, namely that relating to the pottery and other artefacts associated with them. The question about the ethnic identity of the Copper Hoard people may still be debated, although, no doubt, even in this connetion the cultural data supplied by the excavation will be of imense value.

Thus, when in August, 1969, the Archaeological Survery of India came to know that in the course of the ploughing up of a field near Saipai some copper tools had been found, Shri L. M. Wahal of the Northern Circle of the Survey was sent to the site to check on the news. He not only identified the tools as belonging to the Copper Hoard complex, but also studied the find-spot, which, as a result, was trial-trenched by him in May,1970. The trial-trench yielded, besides pottery, a hooked spearhead (fig. 22, no. 1). This made it amply clear that a further digging at the site would be rewarding.

Accordingly, in December, 1970, a small-scale excavation was taken up at the site, under the general direction of the present writer and with Shri Wahal as the principal supervisor. The work ended in February, 1971, the area excavated being 20 x 20 m.

As luck would have it, this excavation gave another tool of the Copper Hoard family. It was a harpoon encountered at a depth of 45 cm. below the surface (pl. IB; fig. 22, no. 3). The pottery that went along with it and was also found in the rest of the trench was a red ware. Many examples of it left the usual ochrous colour on the finger at the time of handling, as had been the case with the specimens from Hastinapura, Bisauli, Rajpur Parsu, etc. However, a study of the large number of pots, mostly fragmentary but sometimes complete, recovered from the excavation made it amply clear that many a pot had a red slip. In one case, even a design—criss-cross lines—was found painted in black colour. It would thus appear that the once-called Ochre Colour Ware may really have been black-on-red ware, the ochrous surface of some of the examples at Saipai and elsewhere being largely due to pulverisation through external causes. (Incidentally, would it be acceptable to scholars if this ware is now christened as Saipai Ware, for it is at this site for the first time that the ware has been found in actual association with a Capper Hoard ?).

From the point of view of typology, special attention is drawn by jars with flaring rim and bowls and basins sometimes having handles and/or spouts (pls. IIA

and B, fig. 21, nos. 19-20). A fragment of a stem was suggestive of the dish-on-stand type, while in another case a ring-stand was indicated.

A very noteworthy feature of the Saipai ware is the occurrence of incised decorations on the exterior. The decorations include rows of dots or dashes or series of triangular compartments enclosing rows of dashes.

Amongst the other finds from the excavation, mention may be made of querns, mullers, pounders, pallets and balls of sandstone, a fragmentary blade of chert and a flake of chalcedony. Also found were some bones of the *Bos indicus*, whereby one would conclude the domestification of that animal.

As to the dwellings, no evidence was obtained by way of plans. However, the occurrence of lumps of clay bearing reed-impressions indicated some kind of wattle-and daub construction. A fragment of burnt earth with three faces smooth was suggestive of a brick, but surely much more evidence is needed before it can be said that the Copper Hoard people made their houses of kiln-burnt bricks.

In one of his earlier papers (Lal, 1951), the present writer demonstrated that the Copper Hoard people were unlikely to have been the Indo-Aryans. The evidence of pottery now encountered in definite association with the Copper Hoards at Saipai shows that these people are also different from the Harappans (this will remain the position until it can be demonstrated by evidence from intermediary sites that the Copper Hoard pottery is derived ultimately from the Harappan).

In the present state of our knowledge, therefore, it would appear once again that the Copper Hoard people were neither Aryans nor Harappans but of some other ethnic group, occupying the Ganga valley, with occasional intrusions into the regions to the south.

As to the date of this occupation, three different pieces of evidence may be invoked. In the first place, it is known that the Ochre Coloured Ware (which is the same as the Saipai Ware) ante-dated the Painted Grey Ware (Lal, 1954-55). Secondly, the occurrence of a fragment of an anthropomorphic figure at Lothal is suggestive of a date around 1900 B.C. (Lal, 1962-63; Gupta, 1965). And finally, below are given eight thermoluminiscence dates which the present writer has received through the courtesy of Professor S. Nurul Hasan. These were worked out by Dr. David Zimmerman of the Research Laboratory for Archaeology and History of Art, Oxford.

Site	*Sample No.*	*TL Age*
Atranjikhera	111-C1	2280 B.C.
,,	111-C2	1250 B.C.

Lal-Qila	112-A1	1730 B.C.
,,	112-A2	2030 B.C.
Jhinjhana	113-B1	1570 B.C.
,,	113-B2	2650 B.C.
Nasirpur	114-A1	1500 B.C.
,,	114-A2	1180 B.C.

Of the foregoing dates, three are prior to 2000 B.C., three between 2000 B.C. and 1500 B.C. and only two after 1500 B.C.

From an overall assessment, therefore, it would appear that the Copper Hoard culture flourished in the first half of the second millennium B.C., if it did not have an earlier beginning. Working from a different angle, Gupta (1963) has also come to a similar conclusion.

APPENDIX F

THE OCHRE-COLOURED POTTERY—A GEOCHRONOLOGICAL STUDY

Dr. B. B. Lal

Ever since the Ochre-Coloured Pottery came to be recognised as a distinct industry of the Copper Hoard culture, many archaeologists have advanced the view that the worn and rolled appearance of the pottery is due to flooding and water-logging. This conclusion is based on a general and visual examination of the OCP horizons, and not on the results of careful structural and textural studies of the deposits in which this pottery is found. Although it has been reported (Gaur, 1969-2, p. 99) that soil specimens from OCP deposits from Atranjikhera were subjected to analysis, the results of the analysis have not been published. In view of the importance of this pottery, soil samples from OCP horizons exposed at Ahichchhatra, Bargaon, Hastinapura, Nasirpur and Jhinjhana were subjected to mechanical analysis by the author, since such a study was expected to throw light on the mechanism of transportation and deposition of the material constituting these strata. The results of these investigations, which have already been published (Dr. Lal, 1969), seemed to indicate the effect of wind on transportation and sedimentation of the material of the OCP strata. In view of this interesting observation, it was considered desirable to extend the investigation to some other OCP sites. Accordingly, soil specimens from OCP horizons exposed at Ambkheri and Atranjikhera have been analysed, and the specimens from Ahichchhatra Bargaon, Hastinapura, Nasirpur and Jhinjhana have also been subjected to further analysis in extension of the work already reported (Dr. Lal, 1969).

Site	Specimen No.	Percentage of standard grades in mm. Medium Sand 0.60-0.20	Fine Sand 0.20-0.06	Coarse Silt 0.06-0.02	Medium Silt 0.02-0.006	Fine Silt 0.006-0.002	Clay <0.002
Ahichchhatra	1	1	7	52	40	—	—
	2	—	10	40	50	—	—
	3	1	13	43	43	—	—
	4	1	2	33	76	3	5
	5	—	9	38	49	4	—
Ambkheri	1	2	38	30	30	—	—
	2	2	39	30	29	—	—
	3	2	37	31	30	—	—
	4	3	37	31	29	—	—
	5	1	26	54	19	—	—
Bargaon	1	1	21	39	39	—	—
	2	1	22	34	43	—	—
Hastinapura	1	1	26	41	31	1	—
	2	1	33	35	30	1	—
Nasirpur	1	3	43	23	27	4	—
	2	1	26	30	39	2	2
Jhinjhana	1(A_1)	1	20	30	44	3	2
	2(A_2)	1	7	47	40	3	2
	3(A_3)	—	12	33	50	3	2
	4(B_1)	1	22	40	32	5	—
	5(B_2)	1	16	38	41	4	—
	6(B_3)	1	12	37	50	—	—
	7(B_4)	—	3	28	69	—	—
	8(B_5)	—	3	24	73	—	—
	9(B_7)	—	6	64	26	4	—
Atranjikhera	1(3)	1	7	38	54	—	—
	2(4)	—	6	16	77	1	—
	3(5)	1	12	60	27	—	—
	4(6)	1	9	22	68	—	—
	5(7)	1	12	67	20	—	—
	6(11)	1	14	60	25	—	—
	7(17)	1	16	33	50	—	—

Statistical measures		Percentage of typical grades in mm.				
Median (Md)	Sorting. Coeff. (So)	0.01-0.07	0.01-0.10	0.06-0.006	0.06-0.002	<0.06
0.03	1.48	83	86	92	92	92
0.02	1.71	76	79	90	90	90
0.03	1.87	76	82	86	86	86
0.01	1.16	81	82	89	92	97
0.02	1.58	83	87	87	91	91
0.03	1.72	50	61	60	60	60
0.04	2.36	61	72	59	59	59
0.04	2.33	55	64	61	61	61
0.05	2.43	61	72	60	60	60
0.05	2.47	73	81	73	73	73
0.03	1.91	70	78	78	78	78
0.03	1.91	68	74	77	77	77
0.04	1.91	72	81	72	73	73
0.04	2.24	62	75	65	66	66
0.05	2.77	49	61	50	54	54
0.03	2.24	63	72	69	71	73
0.02	1.71	74	80	74	77	79
0.02	1.39	84	88	87	90	92
0.02	1.36	82	87	83	86	88
0.03	1.85	69	76	72	77	77
0.02	1.68	76	82	79	83	83
0.02	1.60	85	89	87	87	87
0.02	1.41	84	85	97	97	97
0.02	1.22	84	85	97	97	97
0.03	1.36	91	93	90	94	94
0.02	1.82	92	95	92	92	92
0.01	1.28	82	85	93	94	94
0.03	1.53	88	93	87	87	87
0.01	1.39	82	85	90	90	90
0.03	1.32	90	93	87	87	87
0.04	1.53	85	90	85	85	85
0.02	1.79	84	90	83	83	83

The method of mechanical analysis is the same as described earlier. For mechanical analysis, soil samples were air-dried and sieved through 0.20 mm. sieve. The sieved material was dispersed in distilled water and subjected to sedimentation analysis by the hydrometer method. In each case, 50 gm. of the sieved material was taken and dispersed so as to produce 1000 cc. of the suspension. No sample contained material coarser than 0.20 mm.

In the accompanying published table are shown the standard grades of grain sizes. The statistical measures, median (Md) and sorting coefficient (So), and the typical grades have also been worked out, as they give an idea of the force ef current, the range of velocity and the degree of turbulence of the transporting agent.

From the tabulated data it is observed that most of the specimens are free from the clay grade; only five specimens have been found to contain a small proportion of this grade. Three specimens from Jhinjhana and one specimen from Nasirpur show 2% of clay, and one specimen from Ahichchhatra contains clay to the extent of 5%. Medium sand is present to the extent of 1% - 3%. Since material coarser than 0.20 mm. is absent, the medium sand fraction falls in the grain size of 0.20 mm. The proportion of fine silt ranges from 1% to 5% and some specimens are altogether free from fine silt grade. These specimens are largely composed of fine sand, and coarse and medium silt.

The statistical measures of these specimens are very interesting. The mean average diameter (Md) of the five specimens from Ahichchhatra ranges from 0.01 mm. to 0.03 mm. Their sorting coefficient ranges from 1.16 to 1.87 and falls well below the limit (i.e., 2.50) indicating good sorting. All these specimens are, therefore, well-sorted.

The material fiom Ambkheri, however, shows different characteristics. In this case, the mean average diameter (Md) lies between 0.03 mm. and 0.05 mm. These deposits are distinctly coarser than those from Ahichchhatra. Moreover, their sorting coefficient varies from 2.33 to 2.47, and only one specimen shows a sorting coefficient of 1.72. These specimens are, therefore, not so well-sorted as those from Ahichchhatra.

The mean average diameter (Md) of the two specimens from Bargaon is 0.03 mm. Their sorting coefficient is 1.91, which falls much below the limit of 2.50 for well-sorted sediments. This value of the coefficient is slightly higher than what is shown by the deposits from Ahichchhatra. The material from Bargaon, however, shows a better sorting than the specimens from Ambkheri. The specimens from Hastinapura present a similar picture with mean average diameter of 0.04 mm. and a sorting coefficient varying between 1.91 and 2.24. The two specimens from Nasirpur have a mean average diameter of 0.03 mm.-0.05 mm. and their sorting coefficient varies from 2.24 to 2.77. The material thus shows rather poor sorting.

Of the nine specimens from Jhinjhana, seven show a mean average diameter of 0.02 mm.; only two specimens have a mean average diameter of 0.03 mm. Their sorting coefficient ranges from 1.22 to 1.85 and is thus much below the limit of 2.50 for well-sorted sediments. The seven specimens from Atranjikhera show almost similar characteristics. Their mean average diameter lies in the range 0.01 mm. - 0.03 mm.; only one specimen shows a mean average diameter of 0.04 mm. The sorting coefficient varies from 1.28 to 1.82. All these specimens are characterised by marked sorting.

The typical grades present in all these samples may now be discussed. The grades have been worked out with a view to studying the effect of transportation by water and wind. It may be observed here that loessic material or wind-blown dust falls in the grade 0.01 mm. - 0.07 mm. If any stuctureless homogeneous sediment is found to contain 70% - 80% of the material in this grade, it falls in the category of wind-laid loessic deposits. Fine sand and coarse and medium silt (0.01 mm.-0.10 mm.) can be transported by wind over long distances. In fact, strong winds can transport coarse and medium silt (0.06 mm.-0.006 mm.) by suspension. The presence of 80% of the material in the coarse, medium and fine silt grades (0.06 mm.-0.002 mm.) indicates wind action, and material so deposited is wind-borne loess. Further, if 70%-90% of the material falls in the silt and clay grades only (<0.06 mm.), the deposit is wind-borne silt. Again, a sediment which contains 87% - 99.5% of the material in the fine sand, silt and clay grades (<0.20 mm.), is wind-borne silt. Coarser material falling in the grade 0.20 mm. - 0.06 mm. cannot be air-borne, but it can be transported by wind in short leaps only. All these criteria are helpful in determining the mechanism of transportation and sedimentation of the OCP-bearing deposits.

The five specimens from Ahichchhatra show that the typical grade of grain size, 0.01 mm. - 0.07 mm., accounts for 76%—83% of the material of each specimen, and the next typical grade (i.e., 0.01 mm. - 0.10 mm.) is present to the extent of 79%—87%. The material fallIng in the coarse and medium silt grades (0.06 mm. - 0.02 mm. and 0.02 mm. - 0.006 mm.) is present to the extent of 86%—92%. When the other typical grades are taken into account, it is seen that the fractions falling in the grade 0.06 mm. - 0.002 mm., and in the grade smaller than 0.06 mm. account for 86% - 92% and, 86% - 97% respectively. Their size-frequency curves fall in the fine sand and coarse and medium silt range and show elongated S-shaped patterns typical of eolian dust. There is thus reason to believe that the deposits are eolian and that the strata were formed as a result of wind activity.

When the typical grades in the specimens from Ambkheri are considered, it is seen that the grade 0.01 mm. - 0.07 mm. accounts for 50% - 73% of the material. The next typical grade, 0.01 mm. - 0.10 mm., is present to the extent of 61% - 72%; only one

specimen shows 81% of the material in this grade. The coarse and medium silt grades (i.e., 0.06 mm. - 0.02 mm. and 0.02 m. - 0.006 mm.) account for 59% - 73%. These deposits thus do not appear to fall in the category of Ahichchhatra specimens. The marked difference between the deposits from these two sites is clearly brought out by the cumulative curves. As pointed out earlier, the specimens from Ahichchhatra show elongated S-shaped size-frequency curves, but those from Ambkheri give generally straight curves without any pronounced inflexion. Similarly, the size-frequency curves of the specimens from Bargaon, Hastinapura and Nasirpur are markedly different from those of Ahichchhatra specimens. The cumulative curves of specimens from Jhinjhana are typical elongated S-shaped curves similar to those exhibited by the specimens from Ahichchhatra.

Further, from the study of typical grades it is seen that the material from Atranjikhera is similar to that from Ahichchhatra. Five specimens (1-5) contain more than 80% of the material in the grade 0.01 mm. - 0.07 mm. Similarly, the grade 0.01 mm. - 0.10 mm. shows a very high percentage ranging from 85% to 95%. Specimen 6(11) shows 93% of the material in the grade 0.01 mm. - 0.10 mm. and 90% in the grade 0.01 mm. - 0.07 mm. Similar features are exhibited by specimen 7 (17) which has 84% of the material in the grade 0.01 mm. - 0.07 mm., and 90% in the grade 0.01 mm. —0.10 mm.

It would be seen that the percentage of coarse and medium silt (i.e., 0.C6. mm.— 0.006 mm.) is generally very high in the specimens from Ahichchhatra, Jhinjhana and Atranjikhera. Similar is the case with the grade 0.01 mm. - 0.10 mm. Of the total number of twentyone specimens from these three sites, as many as eighteen contain more than 80% of the material in the grade 0.06 mm. - 0.006 mm., and show marked sorting in the coarse-medium silt grade. Similarly, nineteen specimens show more than 80% of the material in the grade 0.01 mm. - 0.10 mm. The specimens from Ambkheri, Bargaon, Hastinapura and Nasirpur, however, do not show this degree of sorting in any of the two grades in question. The specimens from Bargaon and Hastinapura can thus be placed in one category, whereas those from Ambkheri and Nasirpur seem to fall in another group with a distinctly higher coefficient of sorting.

It would be noticed that the specimens from all these sites do not represent a flood loam or alluvium in situ. Fluviatile deposits contain all the grades, sand, silt and clay, in varying proportions, but the specimens under discussion are highly sorted. The clay grade is either present in a very low proportion or is altogether absent. In fact, no clay is present in the specimens from Ambkheri, Bargaon and Hastinapura. Further, all the specimens are free from coarse sand. The proportion of medium sand also is very small, generally 1%. and only four specimen from Ambkheri and one

specimen from Nasirpur contain 2% - 3% of this grade. There is thus unmistakable evidence of the effect of transportation on the concentration and sorting of the material under examination

It is well known that fluviatile deposits show bedding planes, being stratified, and all the grades, such as sand, silt and clay, are present in varying proportions. The OCP horizons exposed at these sites, however, do not show any detectable stratification or bedding planes. They are neither current-bedded nor ripple-marked, but represent megascopically structureless homogeneous deposits. In view of these features, the OCP strata do not appear to have been deposited by water. Since no coarse material is present, it is reasonable to conclude that the environment of deposition was neither turbulent nor rough. Quiet water environmeut, which characterises water-logging, favours the sedimentation of laminated material and these laminations are produced only in the absence of turbulence at the bottom. In view of these considerations, the deposits in question cannot be attributed to flooding and water-logging.

How then were the deposits coustituting the OCP strata formed ? The marked sorting of the material and freedom from stratification and bedding planes would appear to rule out the possibility of fluviatile origin of the sediments. If the sherds were transported from a distance during floods and deposited at the site of Atranjikhera, as has been stated by Gaur (Gaur, 1969-2, p. 95), the material of the OCP horizon should have been coarse, but even coarse sand is absent. Moreover, if the site had experienced water-logging, as postulated, again by Gaur (Gaur, 1965-I, p. 142), the deposits should have been laminated. Actually the OCP horizons at Atranjikhera and other sites, viz. Jhinjhana, Bargaon, Ambkheri, Nasirpur and Ahichchhatra, have been found to be megascopically structureless and homogeneons, without any signs of lamination or stratification. The possibility of stagnant water shedding its fine, suspended load without producing laminated deposits cannot be visualised, as sedimentation under these conditions shows a degree of stratification and gives rise to megascopically detectable laminations. In view of the freedom of tho OCP strata from bedding planes, current-bedding and ripple-marks and the excellent sorting of the material, it seems probable that the deposits were formed on account of wind activity. Wind-laid sediments, such as eolian dusts or loesses, are free from laminations, are highly sorted and contain more then 80% of the material in the grade 0.01 mm. - 0.10 mm. Eolian dust is generally calcareous and the presence of lime in most of the specimens is thus significant. It appears that the OCP strata were formed by the sedimentation of wind-blown dust. Whereas Ambkheri and Nasirpur have shown a good proportion of wind-blown dust, and Bargaon and Hastinapura have yielded a high percentage of wind-borne material, aeolion silt is a dominant component of the deposits from Ahichchhatra,

Jhinjhana and Atranjikhera In fact, aeolion silts predominate to such an extent that the climate must have been drier than at present. The study of deposits from several sites in Gujrat has revealed a remarkable preponderance of wind-laid material, similar to the aeolion deposits of Europe and Africa. The results of this study need not be discussed here. Suffice it to say that the agreement in textural characteristics between the material from OCP deposits on the one hand and the wind-blown silts from Gujrat and the loessic deposits from Europe and Africa on the other is so close that the aeolion origin of the former canot be doubted. The random distribution of the sherds at different levels within the OCP horizons could thus be visualised as being due to continuous sedimentation of wind-blown material at the sites when the OCP was being used.

The OCP occurs in a worn and weathered condition. It has generally been described as rolled, worn and ill-fired with a friable and powdery surface and a thick fabric. The worn and rolled appearance of the sherds, their weathered surface and the pealing off of the slipped surface, have generally been attributed to insufficient firing, flooding and water-logging. Contact with river silt has also been considered to be responsibile for their weathering. In fact, Gaur has stated that the OCP horizon at Atranjikhera had been flooded and remained water-logged for a considerable time (Gaur, 1967, p. 47). According to him the OCP sherds were probably transported by flood waters and deposited in the depressions away from the place of regular habitation (Gaur, 1969-2, p. 95). This view appears to be untenable, since none of the soil specimens from the OCP horizon represents a flood loam, which generally contains material of all the grades from coarse sand to clay. The matrix, in which the OCP was found embedded, is completely free from material corresponding in size and coarseness to the sherds; and selective or preferential transportation of sherds by the flood waters to the total exclusion of gravel and coarse sand was out of the question.

It is important to observe that weathering is not peculiar to this particular ware: other pottery has also been found in a weathered condition with worn surface and rounded edges. For instance, Alamgirpur I has yielded weathered pottery. Similarly, ochre-washed pottery in rolled and weathered condition has been reported from Nasik I. The various aspects of the problem of weathering of the OCP merit a careful investigation. The three main factors, which are said to be responsible for the weathered appearance of this pottery, are firing, flooding and water-logging, and the action of the river silt. These may now be considered.

Firing:

Inadequacy of firing has been considered to be responsible for the worn and

weathered surface of the OCP. This theory, however, does not seem to have been substantiated by scientific tests. The OCP is generally red and ochre-coloured; occasionally the core is grey. The observed friability is superficial. In fact, this pottery is characterised by a fine texture indicating the use of a levigated clay, such as is generally associated with other wares. The red colour of the pottery indicates the presence of ferric oxide and the amount of ferrous oxide has been found to be inappreciable. There is thus evidence to indicate that this pottery has been fired well at a sufficiently high temperature in an oxidizing atmosphere. In this connection it is pertinent to remark that the weathering of well-fired bricks and pottery is neither unusual nor uncommon. In view of these considerations, the inadequacy of firing as a factor of weathering has to be ruled out.

Flooding and Water-logging:

Although the weathered and worn condition of this pottery has been attributed to flooding and water-logging, no evidence has been put forward to substantiate this view. If the weathering were due to flooding and water-logging, many wares would have exhibited the sort of weathering noticed in OCP. However, it is on record that at Bargaon, where the OCP and another red pottery have been found together (Deshpande, 1967-3), the latter does not show any effect of weathering. It is difficult to explain why the OCP has been affected by flooding and water-logging, whereas the associated pottery has escaped rolling. The phenomenon of weathering noticed in the OCP has, therefore, to be attributed to some factor other than flooding and water-logging. It is well known that unweathered pottery and bricks have been found at Harappa and Mohenjodaro, where the water table was high enough to expose them to the action of sub-soil moisture. The finds from these levels, however, did not exhibit any weathering. It is clear that the explanation for the weathering of the OCP must be sought elsewhere.

Effect of River-silt :

It has been suggested by many workers that the OCP became worn and weathered due to abrasion with river silt. A careful examination of the pottery leaves no doubt that only the broken edges of the sherds present a weathered and rounded appearance, and that the body of the ware shows little rounding effect. The pottery, which is transported over long distances by river currents, suffers considerable weathering and erosion all over the surface including the edges. In view of these considerations, it is difficult to visualise how the river-silt could have brought about the weathering of the OCP and rounded off the edges only.

Cause of Weathering:

From the above it would be seen that the conditions of firing were such as could produce a compact ware of usual hardness. It is further evident that the firing of the pottery took place under oxidizing conditions, as much of the iron oxide is present in the ferric state and the amount of ferrous oxide is inappreciable. The weathering of the OCP, therefore, cannot be attributed to inadequate firing. As already observed, the well-burnt Harappa pottery from the lowest levels saturated with subsoil water is strong and hard with a fresh slipped surface, bearing clear, painted designs, This pottery, however, suffers rapid disintegration and weathering, if exposed to air without washing. The reason for the weathering is obvious. Throughout the long period of inhumation in the soil, the pottery remained in contact with subsoil moisture containing soluble salts. In course of time an equilibrium was established between the pottery and its saline and moist environment; and in the condition of equalibrium the pottery remained free from weathering. Soon after excavation, the moisture present in the pottery evaporated rapidly leaving the crystallized salts in the body of the pottery. The crystallization of the soluble salts in the changed environment brought about the disintegration of the pottery.

Soil analysis data discussed earlier have established the absence of flood deposits and fluviatile sediments in the OCP horizons. Similarly, river-silt has been found to be absent, since no stratified deposits have been encountered. Laminated clay deposits, which are formed under quiet water environment during water-logging, have also been found to be absent. The mechanical analysis data clearly demonstrate a distinct wind activity indicating arid conditions. In view of these considerations the author is led to the conclusion that the OCP remained exposed to atmosphere for a considerable period; and that before the OCP strata at various sites were underlaid by later deposits. the pottery suffered weathering as a result of considerable exposure. It is, therefore, not improbable that when the OCP people were living, there was a gradual deposition of wind-blown material under arid conditions and the pottery became weathered. Such a mechanism of transportation and sedimentation of the material constituting the matrix of the OCP horizons would also explain the random distribution of the pottery.*

*The author's profuse thanks are due to his colleague Shri D. S. Srivastava for supplying the mechanical analysis data presented in this paper.

APPENDIX G

TECHNICAL NOTES ON NBP WARE

Extract from "Ancient India", No. 1, New Delhi, 1946, p.58.

"1. The black coating contains about 13% ferrous oxide which is responsible for the black shade. The original slip was evidently a highly ferruginous body (possibly consisting of a finely levigated mixture of clay and red ochre) ground in water and applied to the surface of the vessel before it was fired. The black colour was doubtlessly developed by the action of reducing gases formed in the kiln. The polishing might have been done before or after the firing. The coating is not a siliceous glaze.

2. The black polished film has been analysed with the following results:-

Silica, 46.55%; ferrous oxide, 25.20%; alumina, 15.33%; lime, 4 74%; magnesia, 3.43%; water, (110°C), 3.45%; alkalies not determined.

Fragments of black pottery were heated in air over a bunsen burner with the result that they lost their black colour and gradually became light red. These fragments were again heated strongly in a glass tube while carbon monoxide was passed over them. This treatment changed their colour to black again. We have also succeeded in converting ordinary red and white pottery into black by heating with pieces of wood. There is no doubt therefore that the black colour is produced under reducing conditions and the red one under oxiding ones in kiln. Although Lucas has tried to prove that the black colour of pottery is due only to carbon, yet our experiments leave no doubt that ferrous silicate is also produced. Since ferrous silicate is said to be of blue black colour, its share in colouring the body black is obvious. The presence of lime and magnesia further indicates that compound ferrous-lime and ferrous-magnesia silicate are also probably formed, which bring about the fusion of the black film in the course of burning. That should account for the high polish and hardness of the surface of some of these specimens. I agree with Lucas that carbon is deposited in the pores of the pottery when a smoky atmosphere is created in the kiln by means of organic matter, but it is obvious that some tany matter will also be produced and deposited in the pottery to enhance its black colour."

Mohd. Sana Ullah

Extracts from 'The Surface Treatment of Early Indian Pottery, "Man", 1953, Art. 58, pp. 41–42.

"Recent study of a large collection of sherds of Indian pottery of the neolithic/megalithic and early historical periods has led me to formulate a theory concerning the

method by which their surfaces were treated, which I would like to propose. It seems likely that this method is actually far commoner than any other in the pre-glaze stages of ceramic technology, and it has not so far been recognised."

"Though in some cases of carefully thrown pottery of the proto-historic period from the Deccan the surface dressing has been washed as a suspension of finely ground haematite before firing, the greater part of early Indian pottery has been burnished, or as it is often called, 'polished'. Burnishing of pots is common at all times in many parts of the world, but on the Indian sherds that I examined the individual slight facets imparted to the surface of the body by the burnishing in the green-hard state were exactly co-extensive with the slight streaks visible in the colour layer. It is, therefore, probable that the facets and the streaks were imparted by the same strokes; that is that the burnishing and colouring agent were the same. I conclude that haematite dressing was rubbed on to the surface with a knob of softish ochre, like those found at Tell-ed-Duweir."

"The pot was probably centred on the wheel in its green-hard state, and the haematite knob was held against it as it revolved. If once this method of applying haematite as a surface dressing for Indian pottery is accepted as fundamental, all the varieties of early wares can be accounted for by variation in firing techniques. The variation of colour in oxidized wares can be explained by the variation of the temperatures at which they were fired, since the red colour of haematite in firing changes progressively between about 600°C and 850°C. The grey-bodied wares can likewise be accounted for by firing under special reducing conditions. It is probable that the grey wares of the Ganges valley sites were fired in open saggars (refractory clay boxes) stacked one above the other in the kiln. The ware in saggars closed by a saggar above them would fire in a fully reducing atmosphere, whilst the ware in the top saggar, which would be open, would fire in an oxidizing atmosphere, and thus come from the kiln red. The hypothesis is borne out by the presence on the Ganges sites of a small proportion of red ware of the same form and fabric as grey. In view of the close association on the sites of the Northern Black Polished ware with the grey wares, and of what was proposed above concerning the method of applying haematite dressing, the Northern Black Polished ware can be explained as a haematite-dressed ware, saggar-fired."

"The vitreous effect found on the surface of the finer early Indian wares can be accounted for, on the hypothesis of haematite dressing, by the action of the ferric oxide in firing as a flux to that part of the body clay in immediate contact with it, which would result in the formation of a vitrified skin at quite a low temperature. The skin would tend to separate itself from the more granular body, and result in the familiar flaking of the surface of worn or damaged pottery."

P. S. Rawson

Extract from "Indian Archaeology—A Review", 1955-56 pp. 56-57.

"Several specimens of the Northern Black Polished Ware were examined for colour-development and changes in the clay on baking with a view to determining the conditions of its firing and the technique of its fabrication. This investigation led to a new observation, viz., the development on heating of spherulites on the surface of the shining layer of the Ware. The lustre on the surface of the Ware therefore appears to be composed of some easily-fusible material, possibly of organic origin, which undergoes incipient fusion at a low heat. The layer just below the uppermost film was, in most cases, noticed to be buff or orange-yellow. The blackening of the uppermost surface may, therefore, be due to some sort of post-firing treatment, in which the pottery, still hot from the kiln, was coated with some liquid such as a oil, juice of some plant or a similar organic concoction. Natural resins such as shellac or benzoin, vegetable or animal fat, iron-rich organic musilage, such as plantain- or *amla*-pulp or some similar organic material may have also been responsible for the production of the lustre. Further research is in progress. A systematic plan for the investigation of problems of ceramic archaeology was chalked out and experimental work initiated on such aspects as temperature-control under firing, colour change, pyrometry, density, hardness determination and ceramic petrography. The investigation is still in an experimental stage."

Dr. B. B. Lal

Extract from "Indian Archaeology-A Review", 1959-60, pp. 120-21.

"Attempts were made to synthesize the Northern Black Polished Ware in laboratory under carefully-controlled condilions, employing materials of definitely-known composition and firing at different temperatures. The investigation corroborated the already-published results (*1955-56*, p. 56) on the composition and technique of the Ware, though the exact conditions of firing and the nature of the ferruginous material employed in its manufacture still remained elusive."

Dr. B. B Lal

Extract from R.E.M. Wheeler's "Ealry India and Pakistan", London, 1959, p. 30.

"Many sites in northern and central India, occasionally as far south as Amaravati, have produced this Iron Age ware, which is as distinctive in the

subcontinent as is *terra sigillata* on European sites. It is wheel-made and normally thin, with a highly lustrous surface ranging from grey or brown to black, and steel-like in quality. The paste is well levigated and is white to reddish. The bright gloss is not a glaze or lacquer. The process of manufacture is doubtful: it has been thought that after being turned on the wheel, the pots were subjected to elaborate burnishing, and then coated with a finely levigated, highly ferruginous clay, and again burnished; and that they were then fired under reducing conditions to a temperature producing an incipient fusion of the slip, this accounting for their exceptional hardness and lustre. Recently, the laboratory of the British Museum has questioned the burnishing without, as yet, providing any complete alternative explanation. Its present verdict is that the unfired pots were dipped in a suspension of a ferruginous inorganic material, probably resembling a red earth; and that, after firing to a temperature of c. 800° C., the kiln was sealed so that the pots cooled in a reducing atmosphere. The mineralogical identity of the "red earth" has not been discovered, and the main problem, namely the precise nature of the surface layer, still remains unsolved."

Miss Bimson, British Museum

Extract from "Current Science", December 20, 1966, 35, No. 24, p. 623.

"An analytical study of the lustrous coal black slip of the Ware indicated that the presence of magnetic oxide of iron is responsible for its black colour, and the formation of glass-like soda-alumina-silicate is responsible for its lustre.

An electron microscopic study of this slip has now confirmed the above analytical study. The shining coal black slip of the N.B.P. Ware consists of euhedral crystals of magnetic oxide or iron on a background of amorphous, structure-less, glass like material. Magnetic oxide or iron, $Fe'' F_2''2o_4$ is opaque, isometric and black with metallic lustre in reflected light."

K.T.M. Hegde

Abstracted from 'Some Technical Observations on, N. B. P. Ware Slip', "Potteries in Ancient India," Patna, 1969, pp. 188–92.

The earlier tests and examinations were duly taken into account and further examinations carried out on the N.B.P. slip. "On the basis of these examinations and

investigations, we may tentatively suggest that black colour of the slip is materially on account of carbon and our experiments and observations do not substantiate the presence of magnetic or ferrous silicate.

Views of Lal mentioning the use of organic material which will deposit carbon on charring need attention. However, in view of the presence of a detachable clayey slip, post-firing application of organic liquids looks doubtful. The slip might have been obtained by the application of well levigated emulsion of refined clay and organic liquids (say, plant juices) over the dried pots. After the slip was dry, the pots were fired under reducing condition. The organic matter in the slip carbonized, without burning out, resulting in a uniform lustrous black surface."

H. C. Bhardwaj

Extracts from 'Physics and Chemistry in Indian Archaeology', paper read at the annual conference, Indian Archaeological Society, Nagpur, 1970.

"An analytical study of the lustrous coal black slip of the ware indicates (Hegde, 1962) a very high percentage of Sodium and iron in the slip When heated in an open crucible the colour of the ware first turned yellow and finally red. When a very small fragment of the slip was held near a magnet it was attracted by the magnet, while a similar fragment of the body was found to be relatively less magnetic.

From the analytical data above, it was observed that the shiny black slip of the N.B.P. Ware was produced by an application of liquid clay, quite similar to that employed for preparing the body of the ware, but which in addition to levigation was carefully further sifted and cleaned for reducing heavier particles. This clear clay suspension was peptized by the addition of an alkaline material.

Peptized clay liquids give a black shine slip when fired in reducing condition on account of the following reaction taking place within the sealed kiln.



$3\ Fe_2O_3$ plus Co – $2\ Fe_3O_4$ plus Co_2

On the surface of the ware is, hence, produced a thin layer of black magnetic oxide of iron which is responsible for the black colour of the slip.

The effect of alkali is reduction of refractoriness or vitrification temperature of the clay. Alkali combines with alumina and silica in the clay to fuse them at as low a

temperature as 70 C and hence acts like a flux.

The liquid so formed does not crystallize on cooling, instead forms an amorphous glass-like substance. This glass-like substance imparts the NBP a glossy lustrous surface finish."

"In the production of N.B.P. Ware slip, clay suspension was quite likely treated with a clear solution of 'Sajjimatti'. On heating the slipped pottery to 700° C. the Sodium components are decomposed to Soda which fluxes the clay to form complex silicates which on cooling impart the glaze, like glass, on the surface of the Ware."

K.T.M. Hegde

APPENDIX H

BIBLIOGRAPHY OF OCP AND RELATED LITERATURE

(The following bibliography prepared jointly by Shri K. N. Dikshit, Shri Shanker Nath and Editor, comprises literature on the OCP, but its scope had to be extended to include such related literature, where connection with the OCP has been indicated directly or indirectly. Ed.)

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APPENDIX I

BIBLIOGRAPHY OF THE NBP WARE

(This bibliography has been compiled by Shri Ramesh Chandra Agrawal, Shri Shanker Nath and the Editor. It includes reports on main excavated sites, which have yielded the NBP Ware. The 'Indian Archaeology—A Review' contains many notices of the discovery of the NBP Ware in surface exploration. All such notices have been brought under the title 'Indian Archaeology—A Review', at the end indicating the year to which the publication relates, and not the year in which it has been actually published. Ed.)

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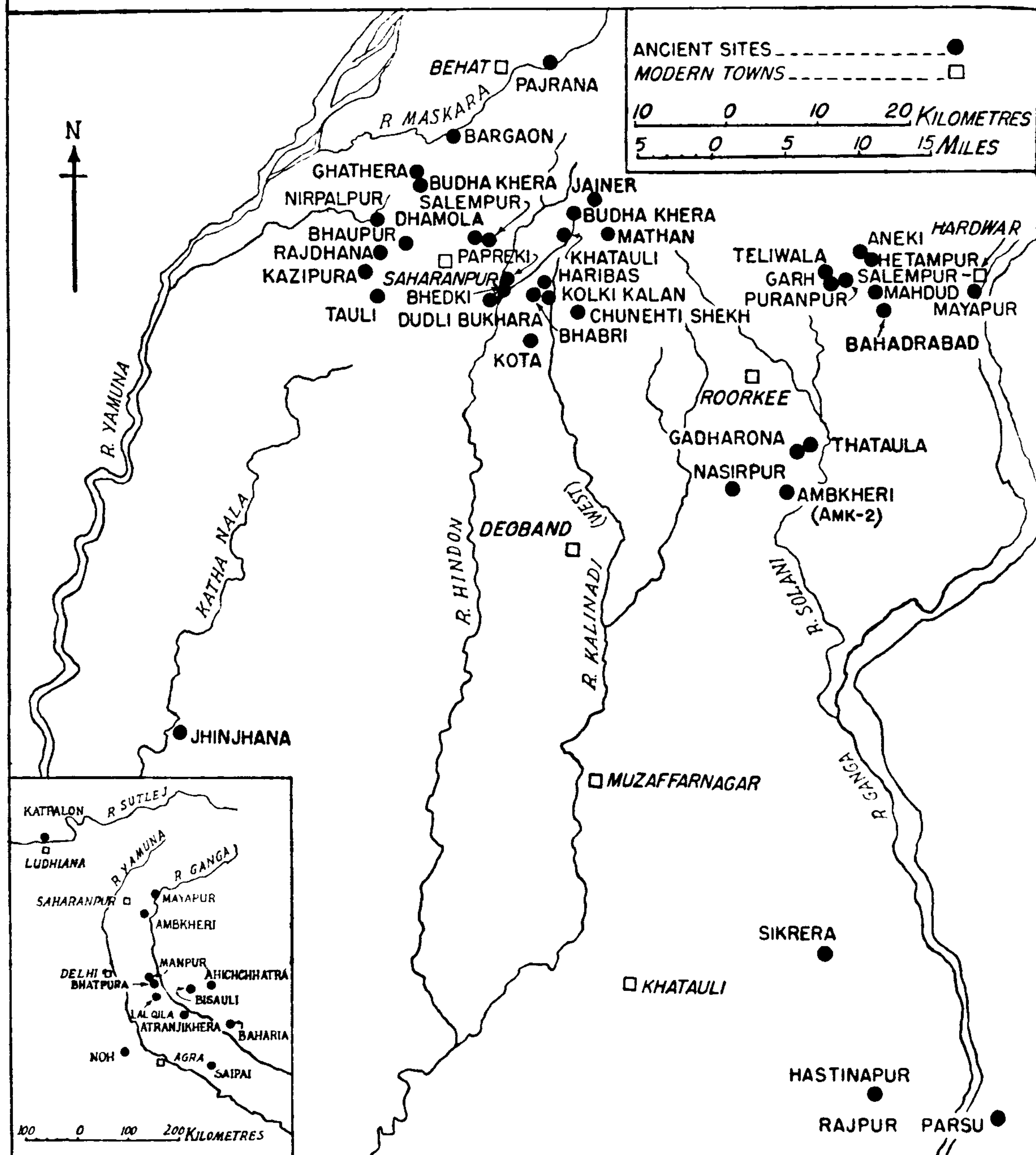


Fig. 1 Distribution map of OCP in the upper Ganga valley.

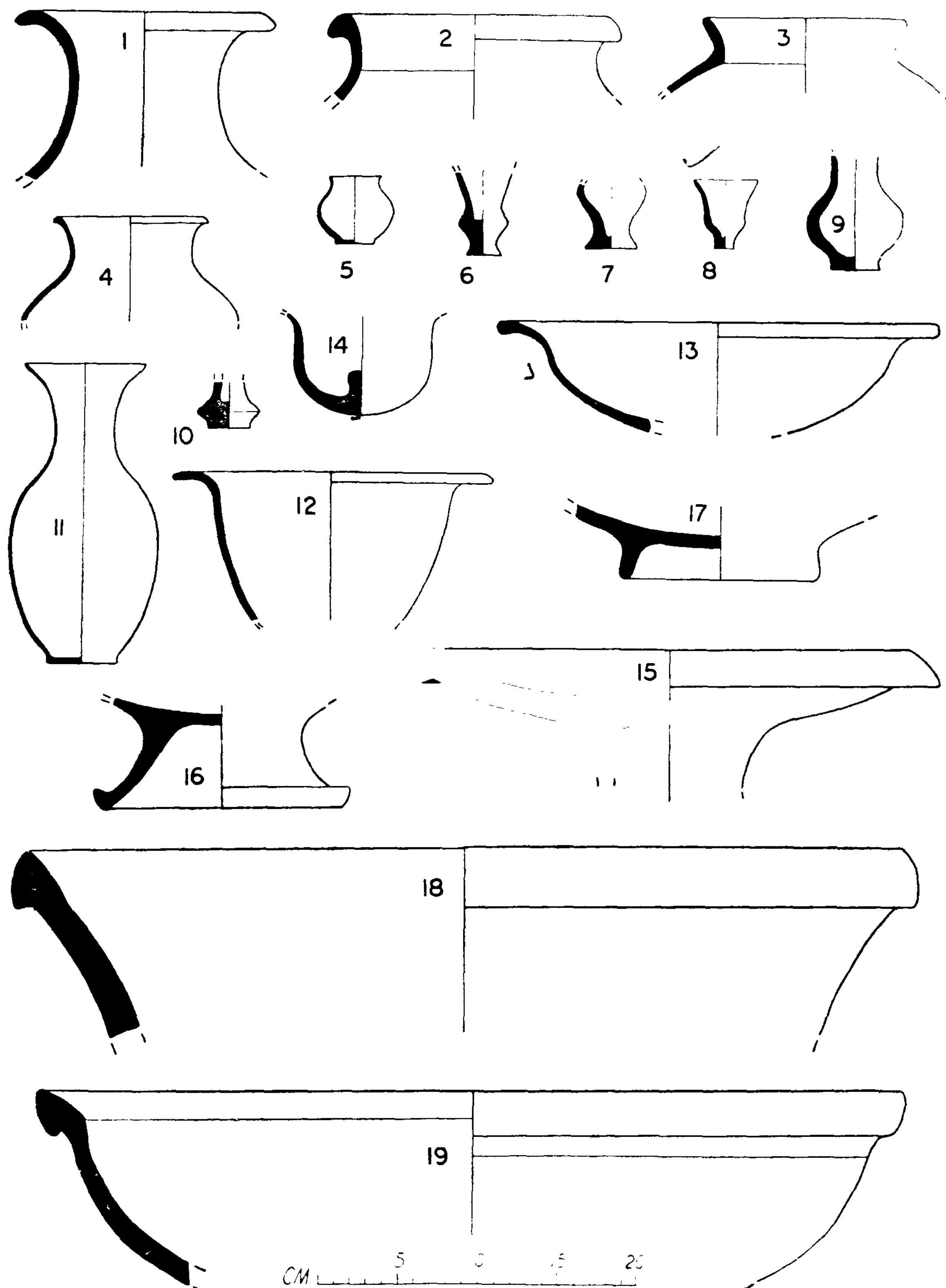


Fig. 2 Pottery shapes from Ambkheri

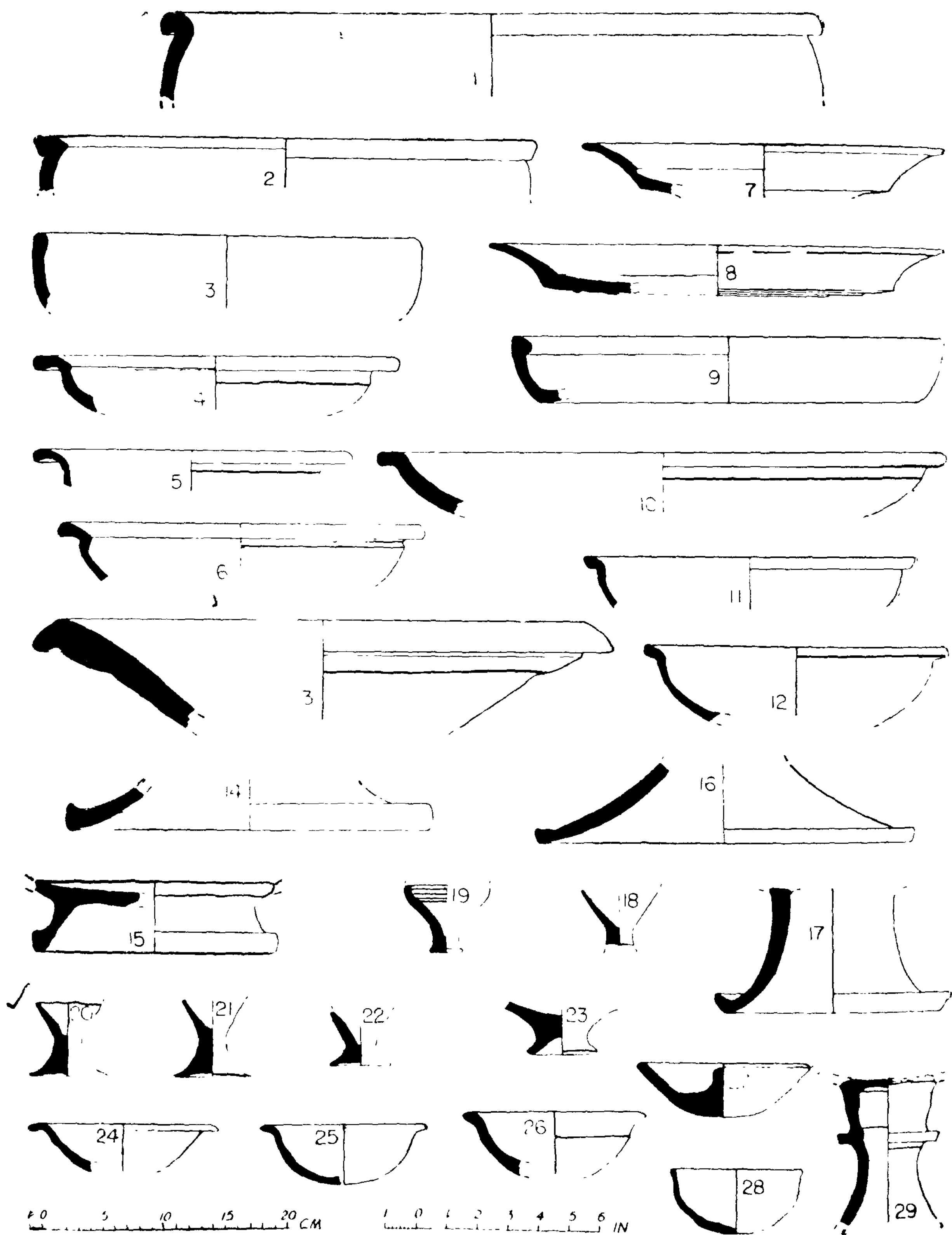


Fig. 3 Pottery shapes from Bargaon

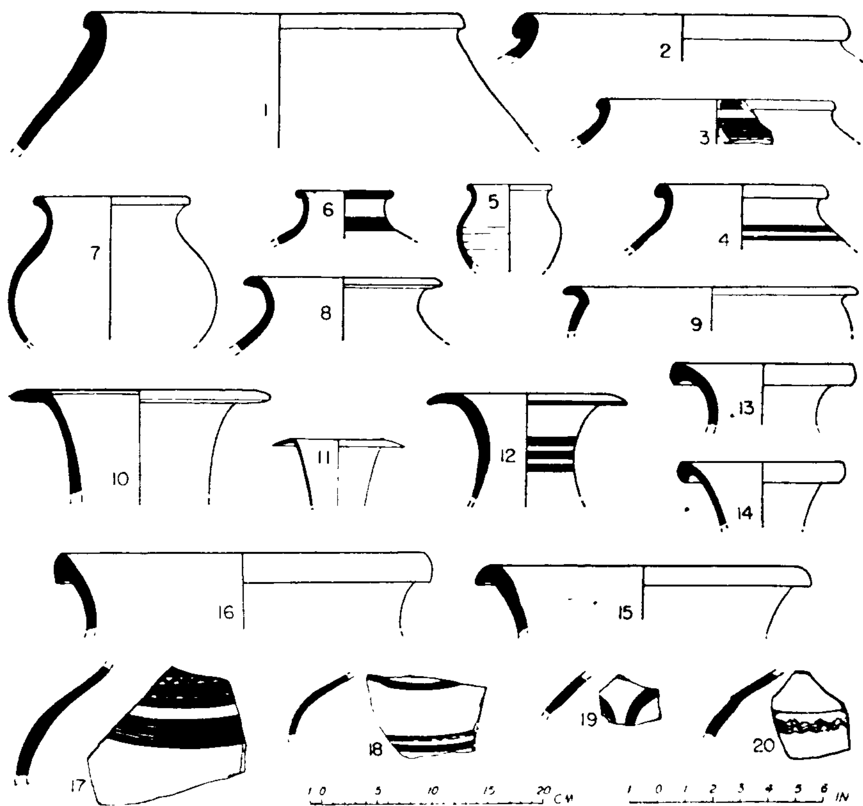


Fig. 4 Pottery shapes from Bargaon

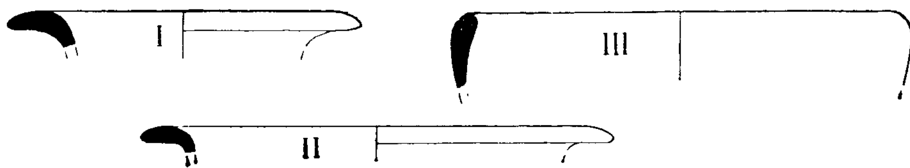


Fig. 5 OCP shapes from Hastinapura

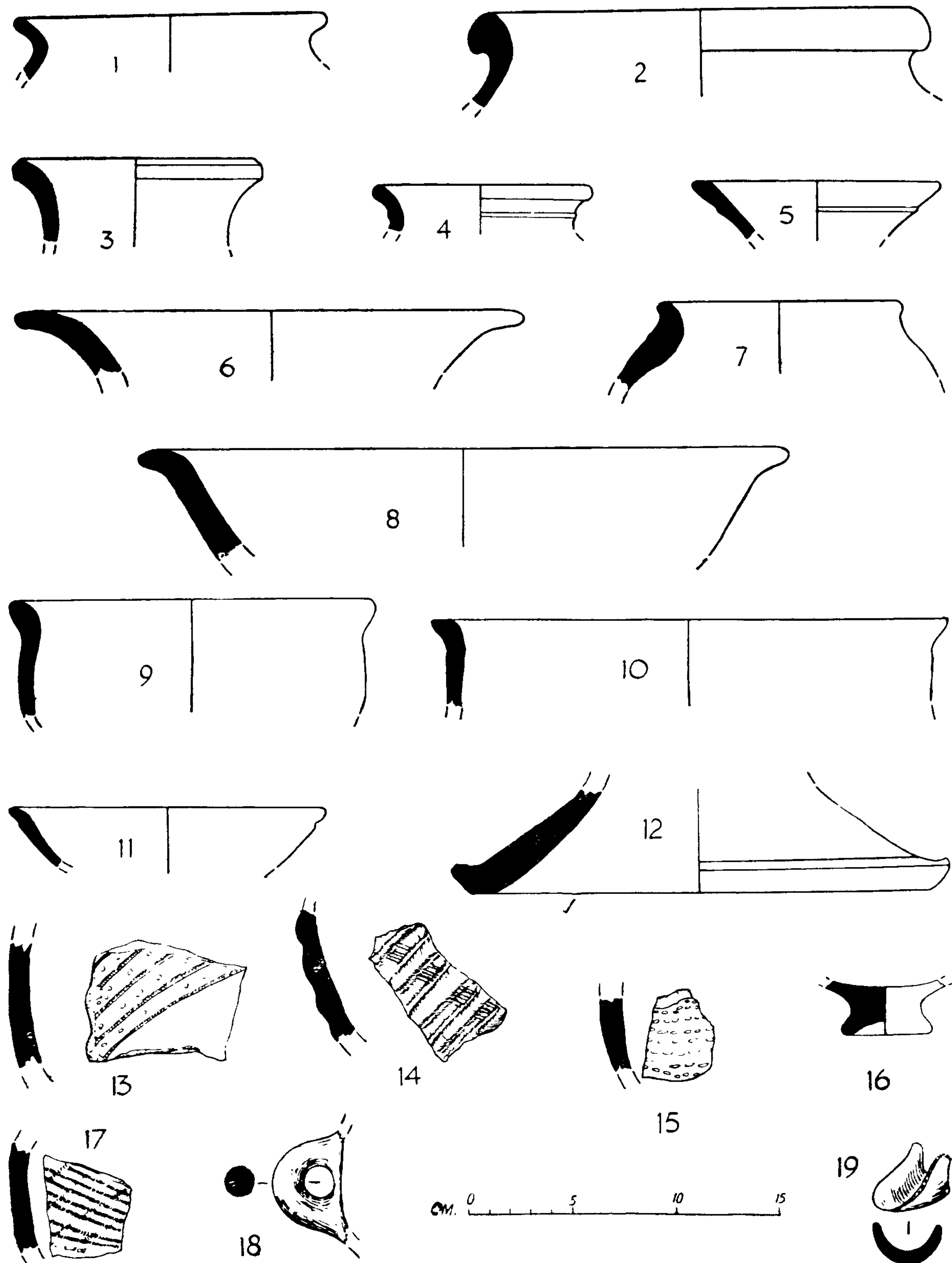


Fig. 6 OCP shapes from Atranjikhera

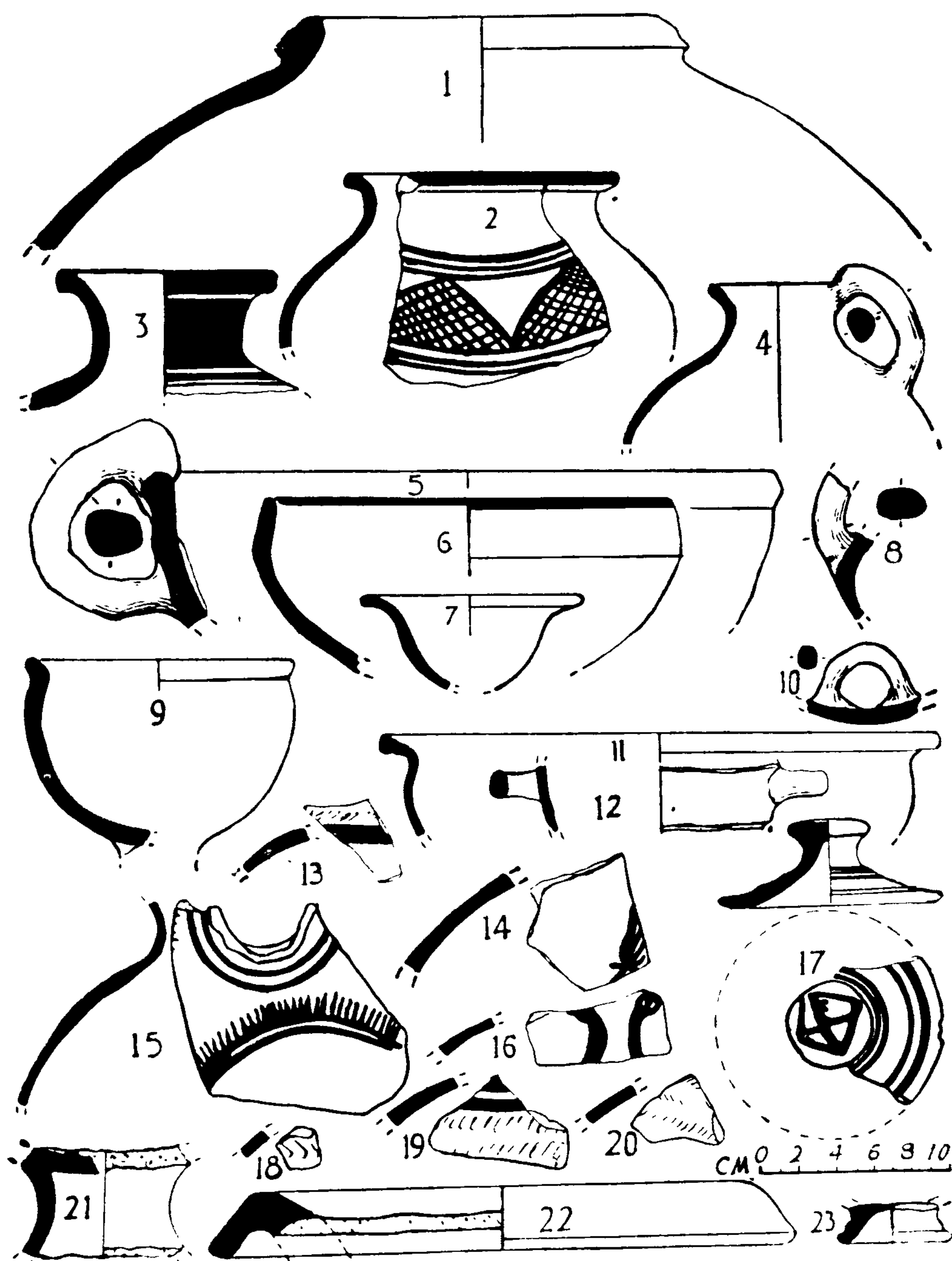


Fig. 7 Pottery shapes from Lal-Qila.

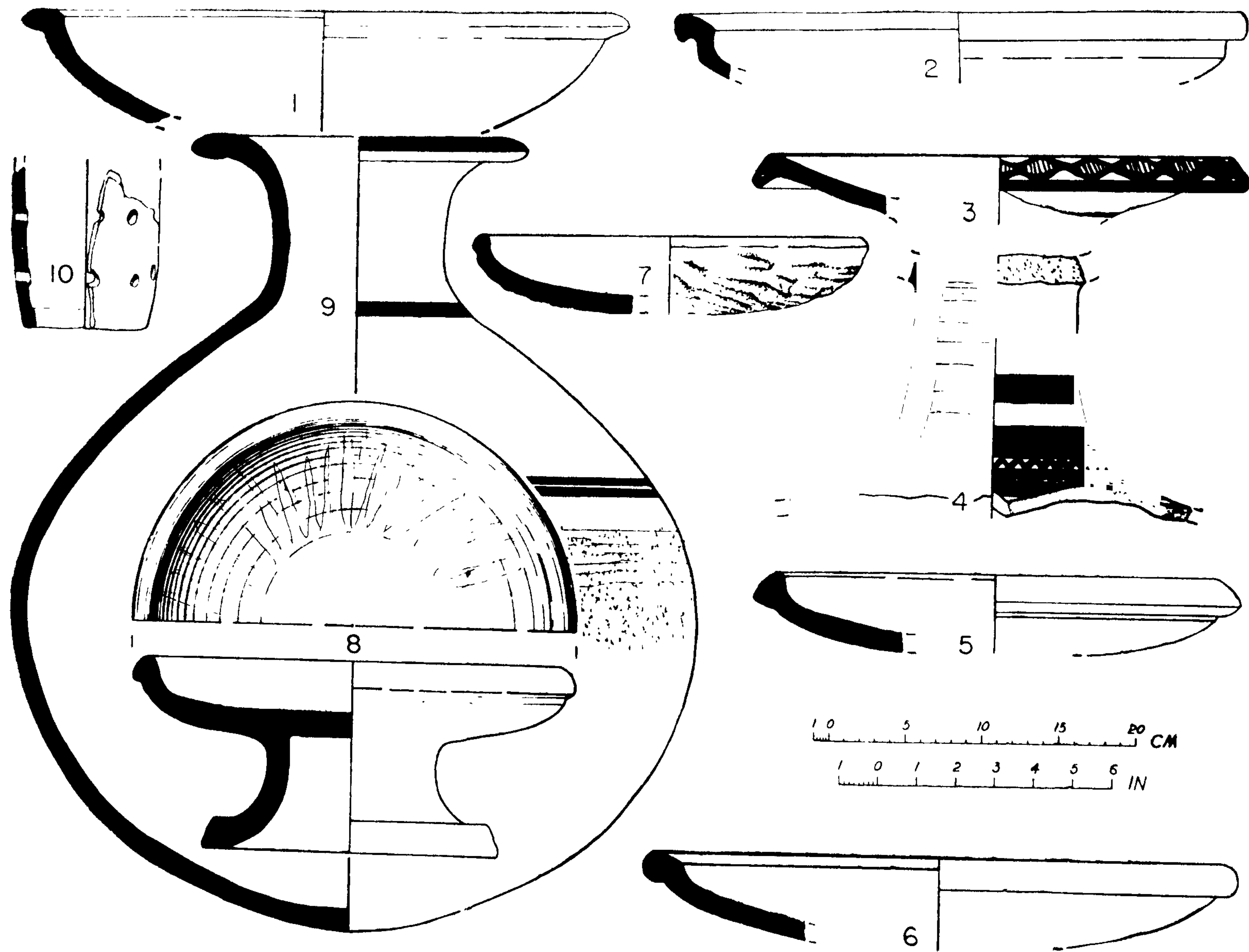


Fig. 8 Pottery shapes from Bara

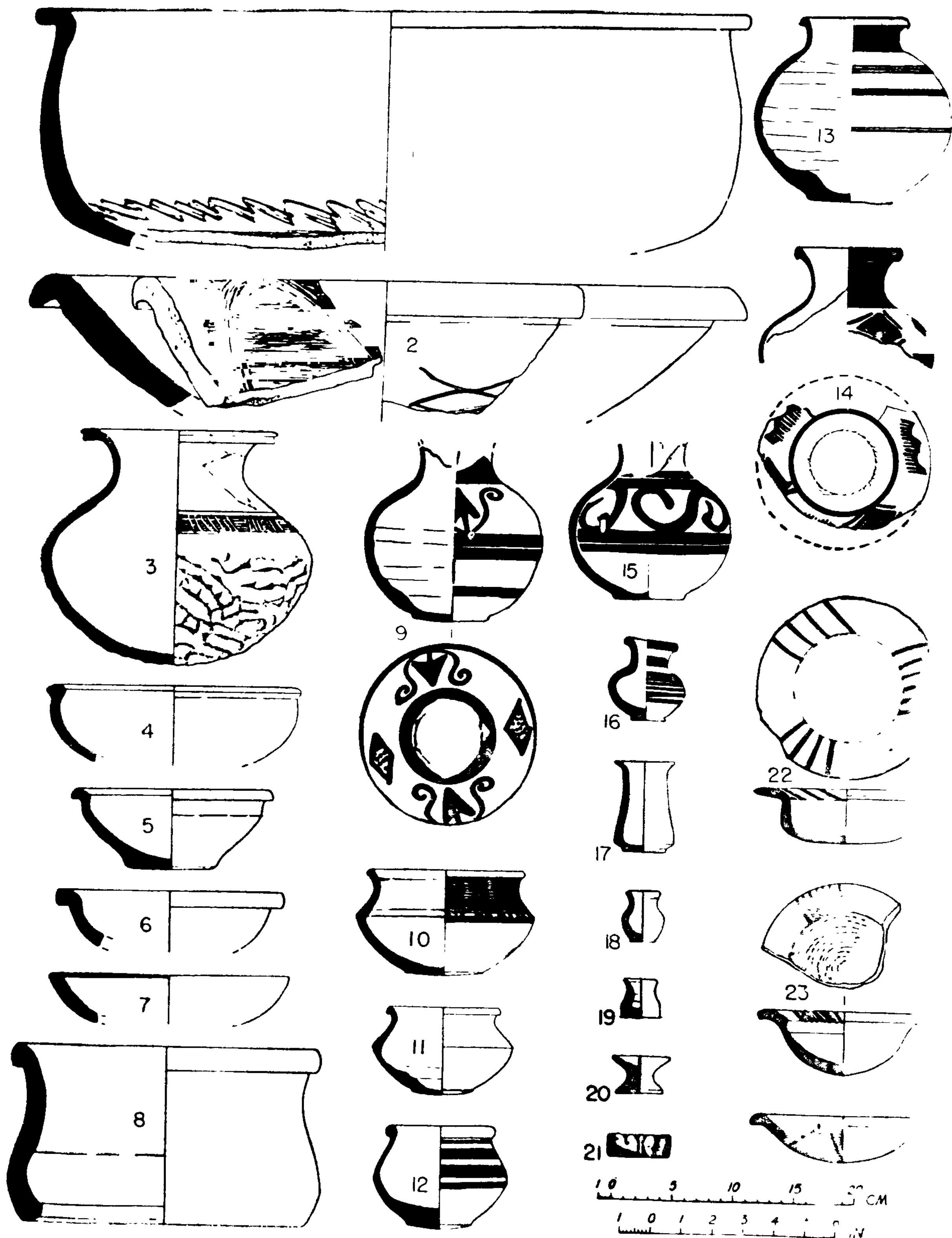


Fig. 9 Pottery shapes from Bara



Fig. 10 Painted and incised designs from Bara

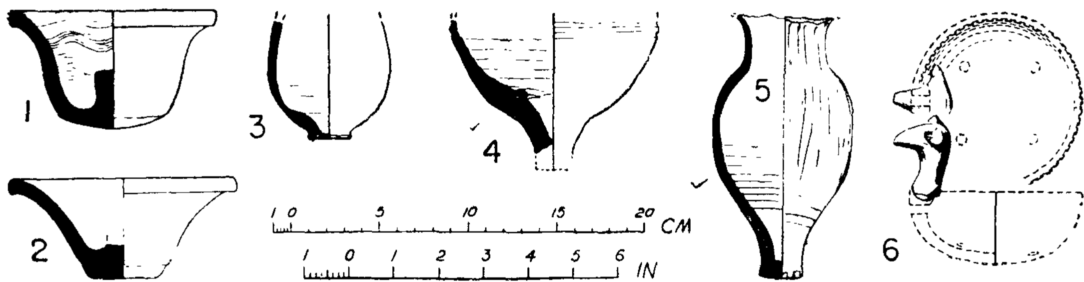


Fig. 11 Harappan pottery from Bara

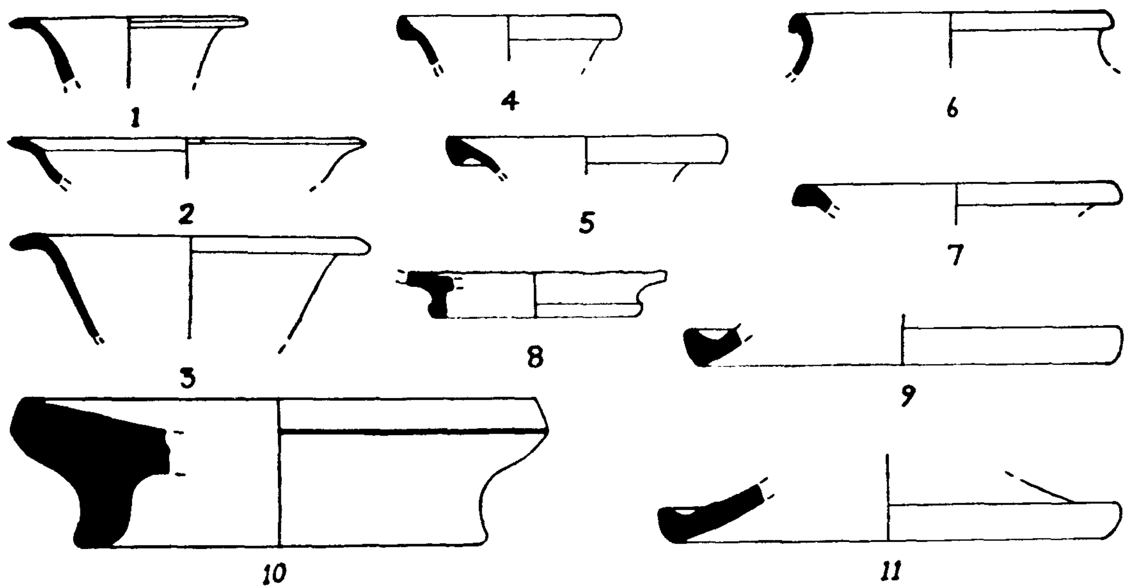


Fig. 12 Pottery shapes from Anwarpur Baroli

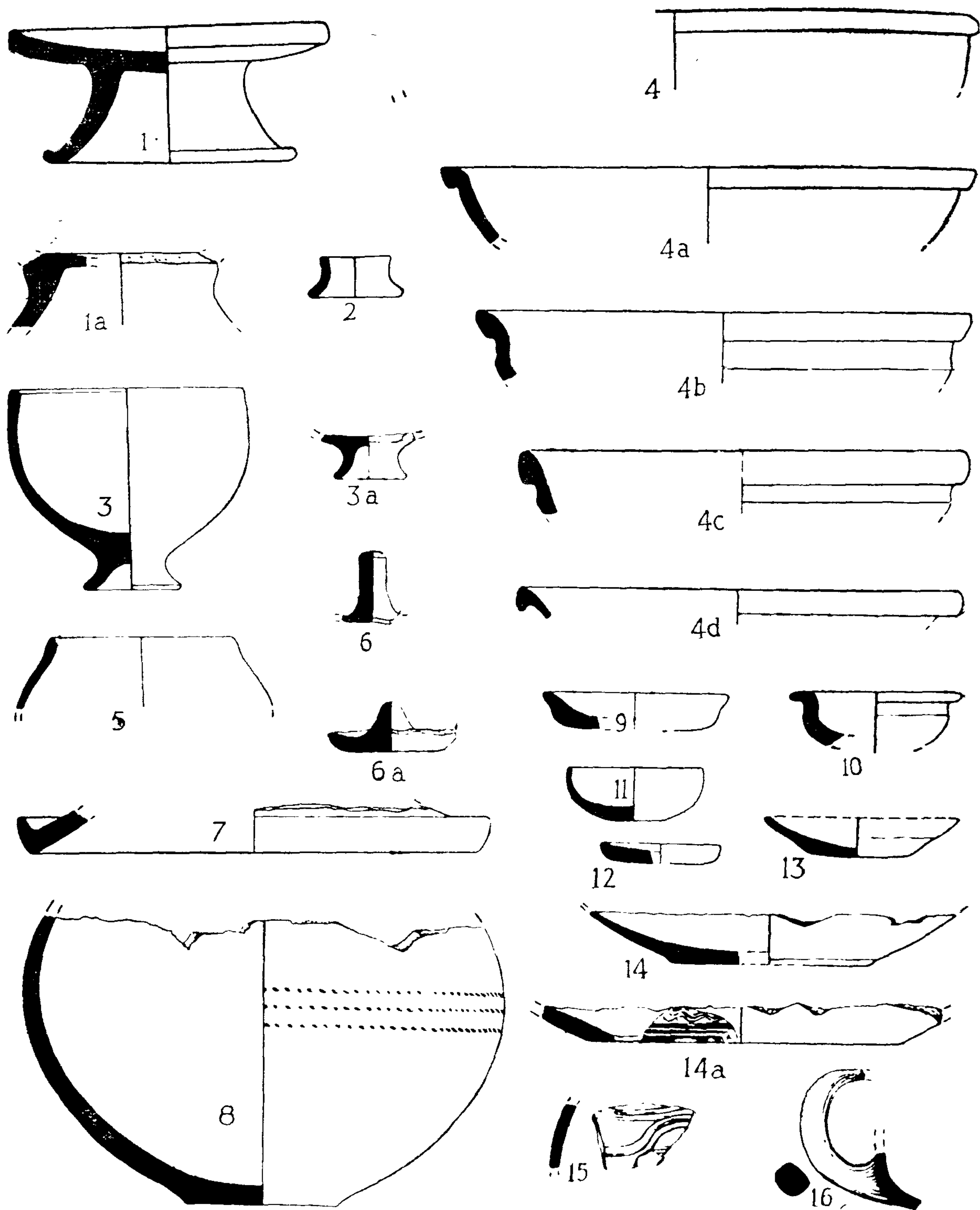


Fig. 13 Pottery shapes from Bahadrabad

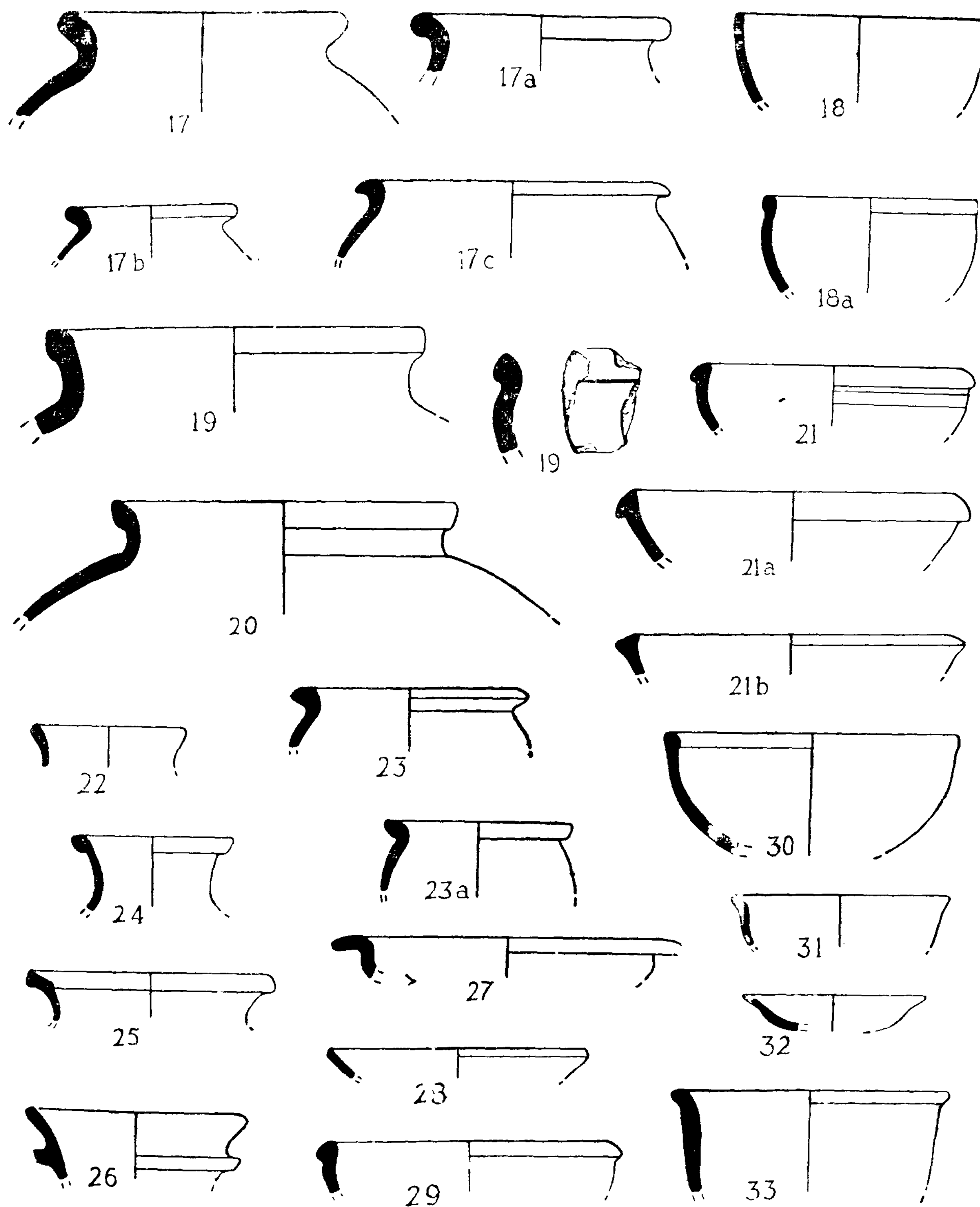


Fig. 14 Pottery shapes from Bahadrabad

Fig. 16 Pottery shapes from Baharia

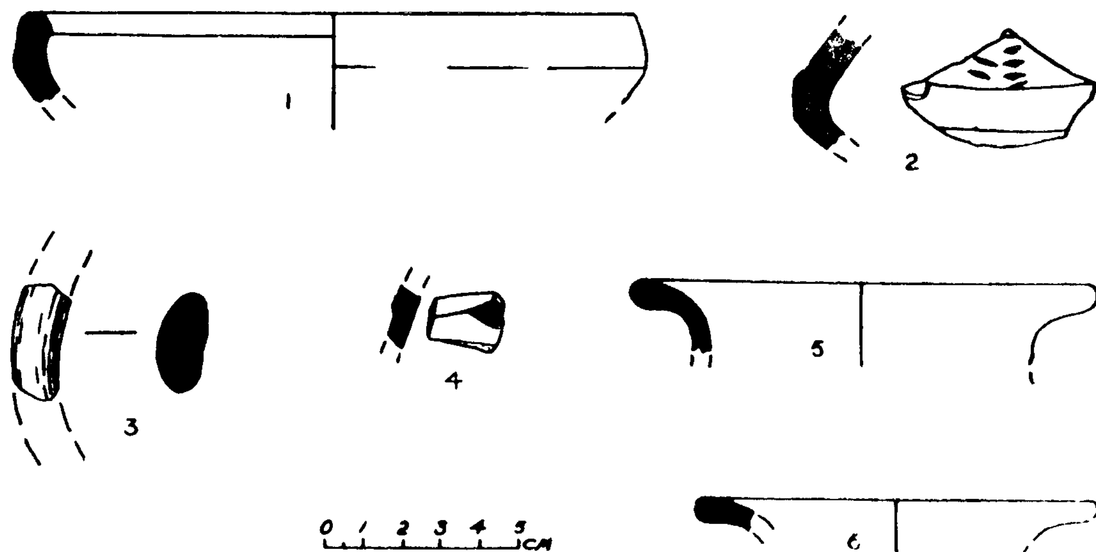


Fig. 17 OCP shapes from Noh

Comparative Chart of Pottery from Bahadrabad and other Proto-historic Sites

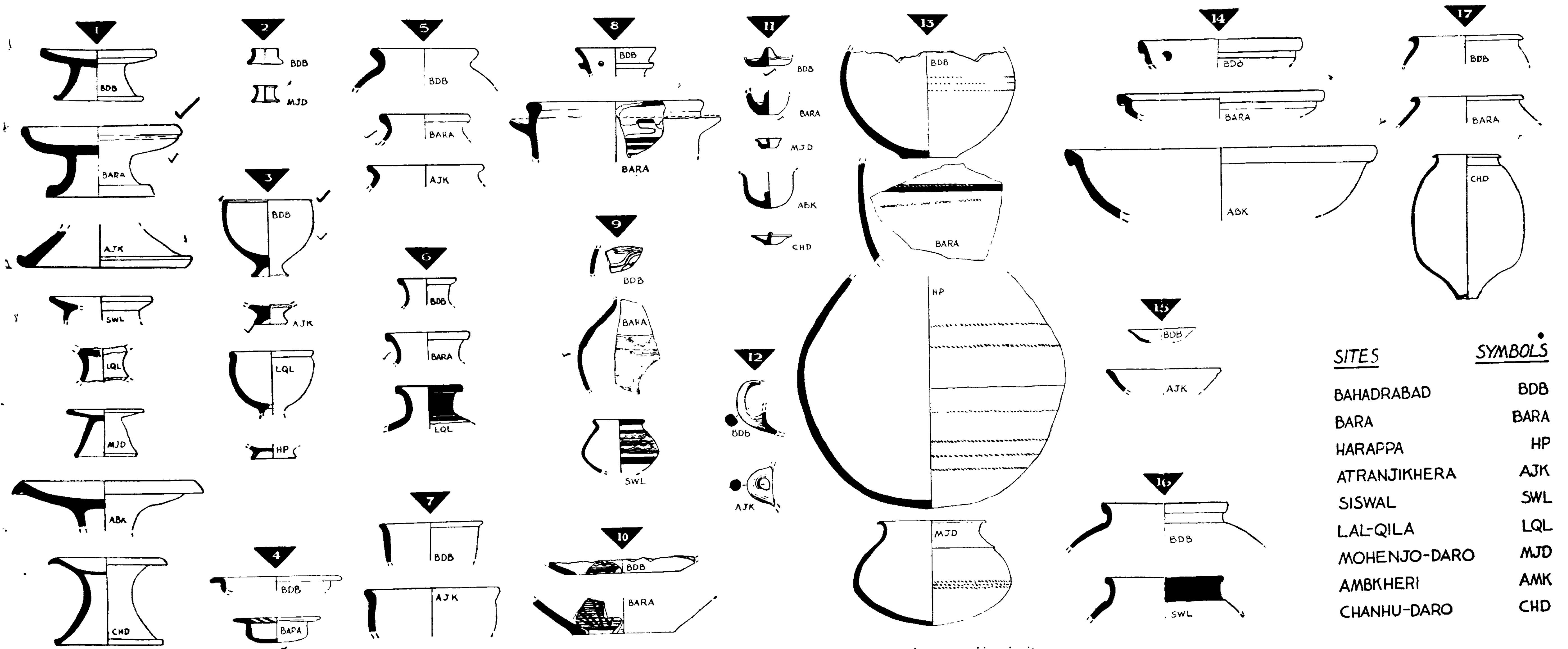


Fig. 15 Comparable shapes from Bahadrabad and other northern proto historic sites

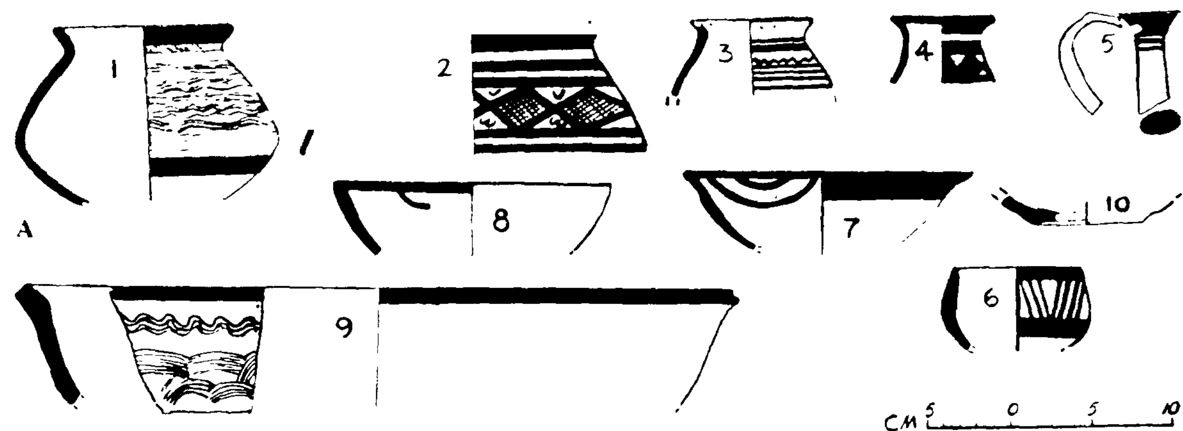


Fig. 18 Pottery from Siswal, Phases A and B

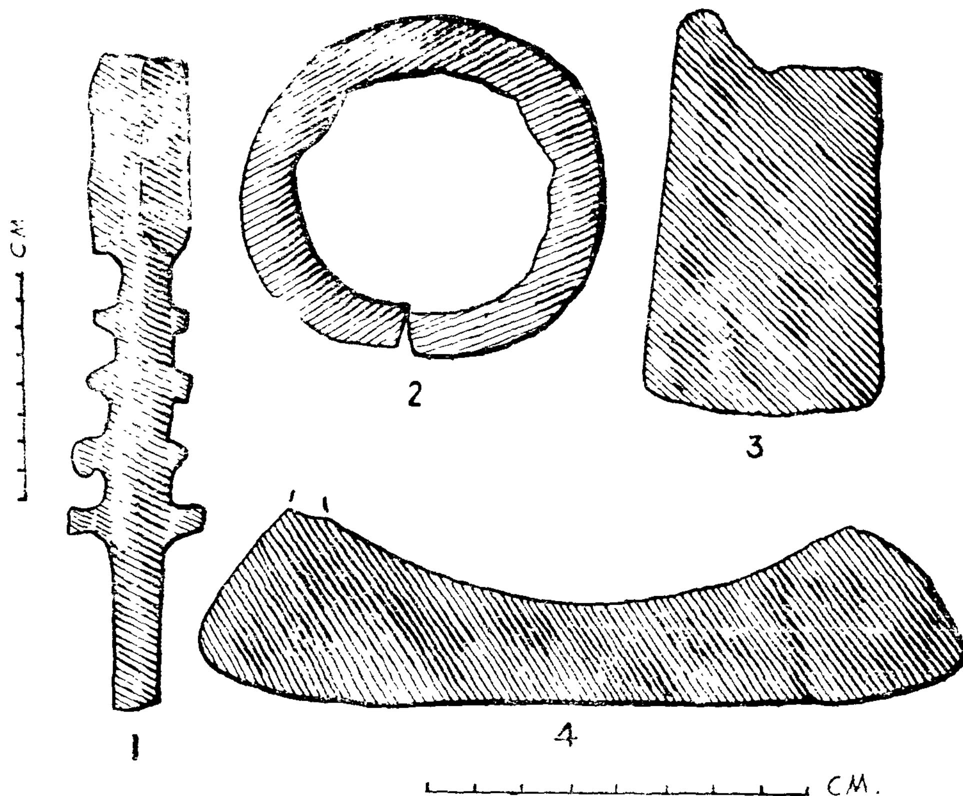


Fig. 19 Copper implements from Mitathal

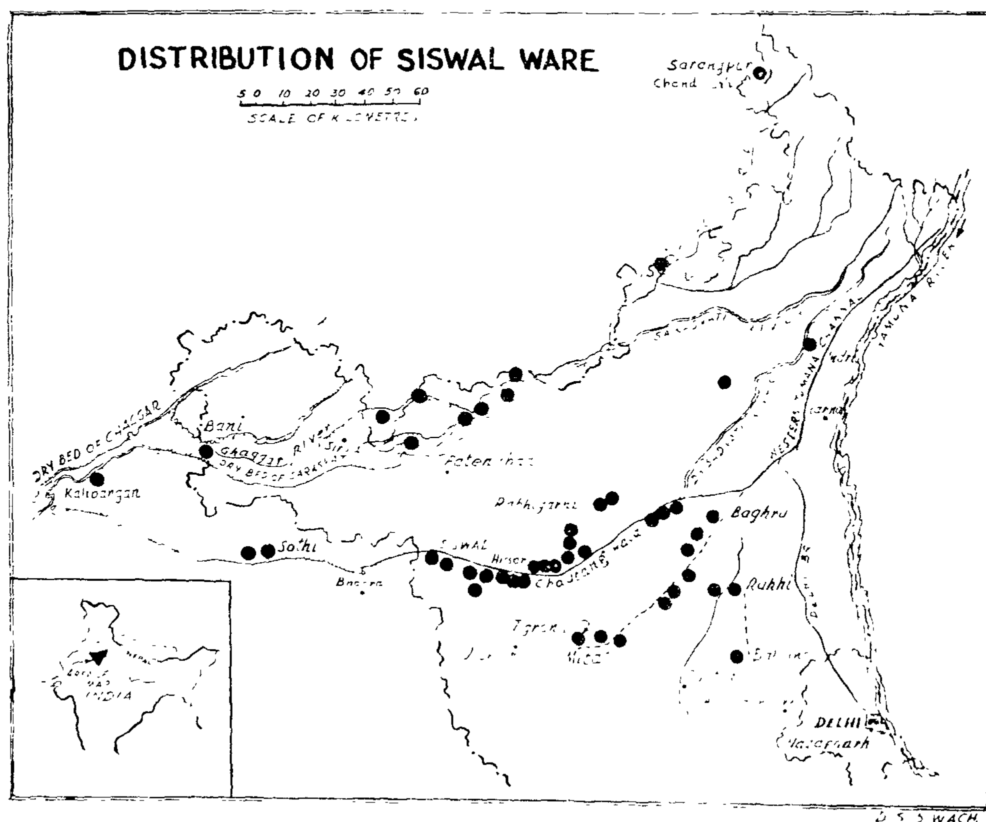


Fig. 20 Distribution of Siswal ware

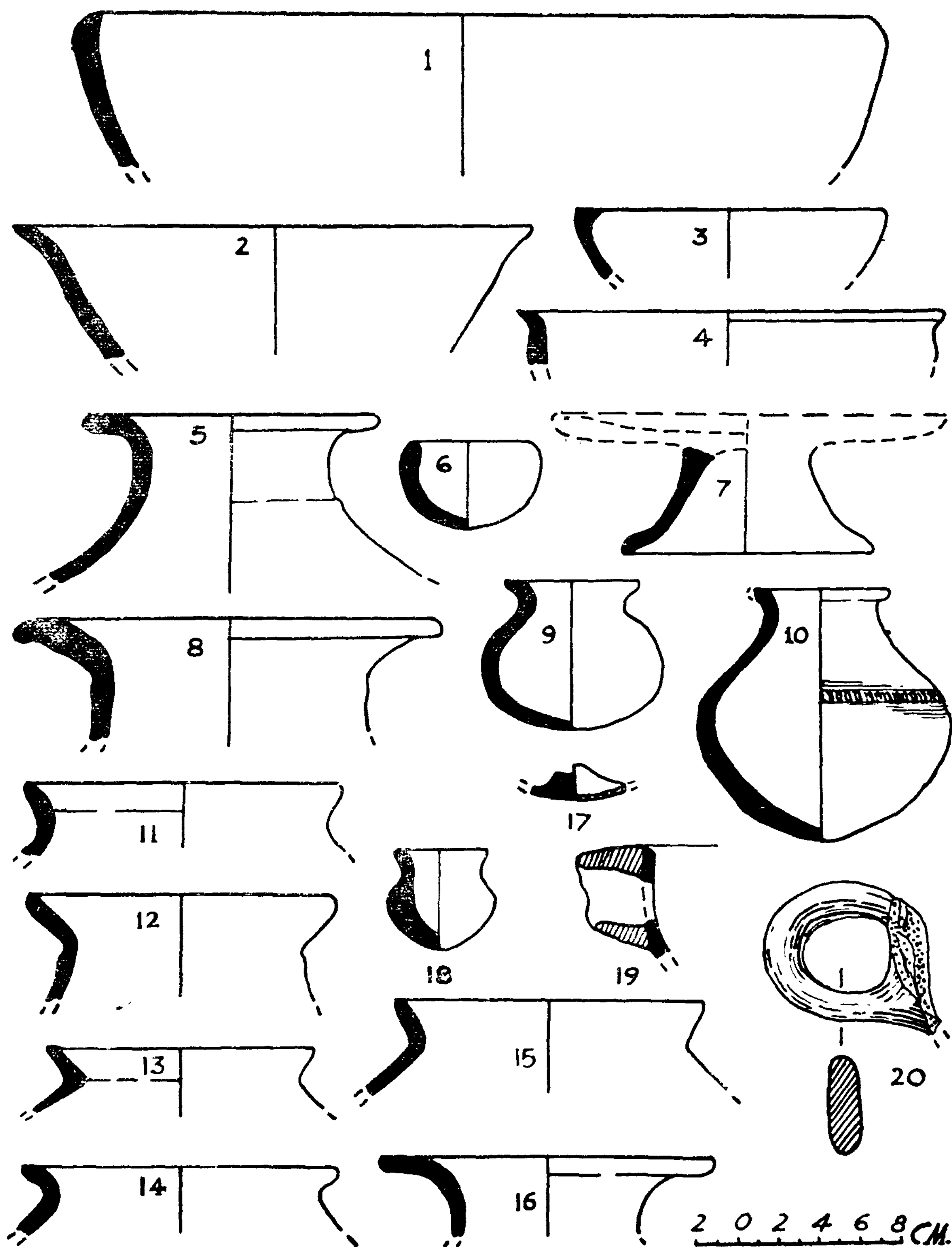


Fig. 21 Pottery shapes from Saipai

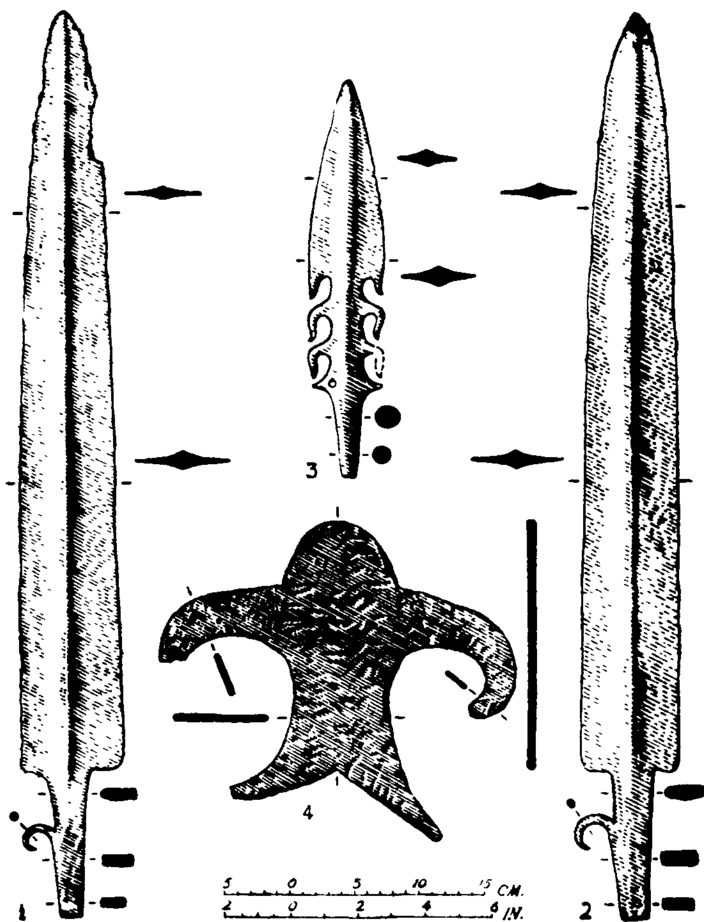


Fig. 22 Copper implements from Saipai.

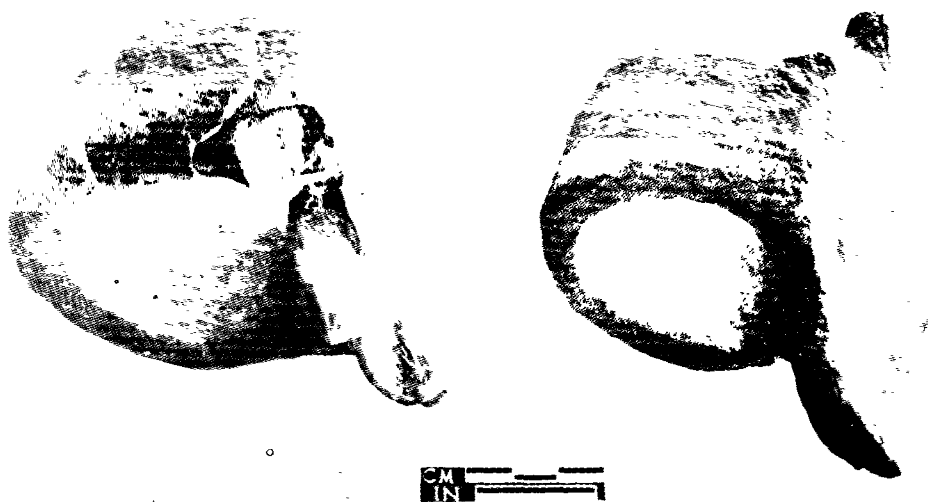


Plate I : A. Saipai : handles of pottery

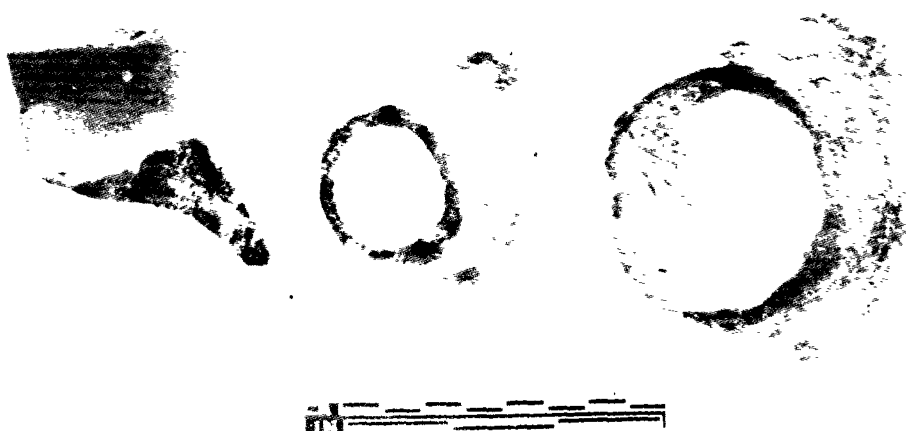


Plate I B. Saipai : spouts of pottery

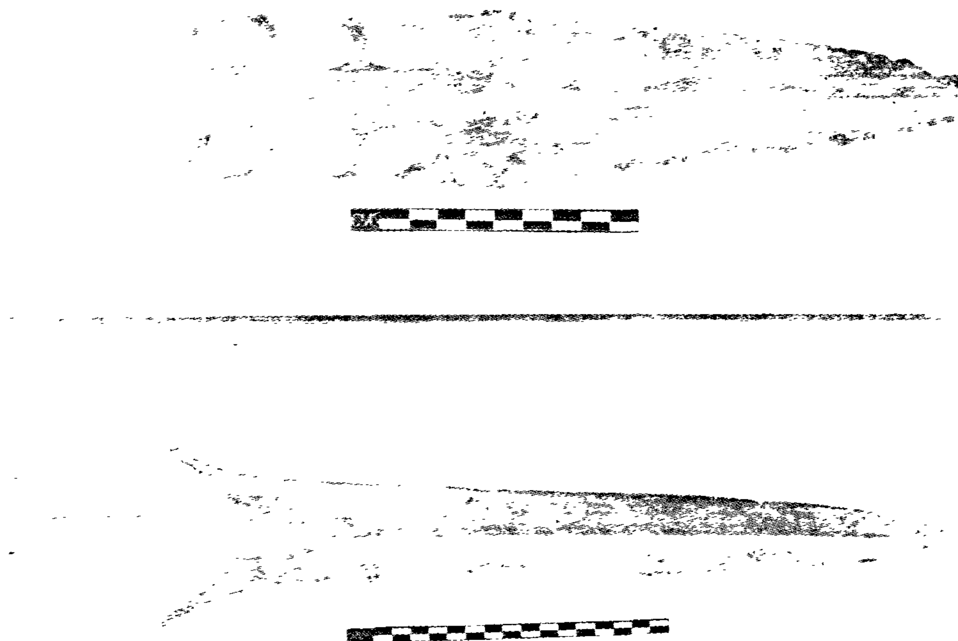


Plate II : A. Copper implements from Baharia

Plate II : B. Saipai : Copper harpoon in situ during excavation

READINGS IN INDIAN ARCHAEOLOGY

(Abstracts from "A Deluge ? Which Deluge ? Yet Another Facet of Problem of the Copper Hoard Culture" by B. B. Lal, published in *American Anthropologist*, Vol. 70, 1968, pp. 857-863. One figure and two plates.)

The purpose of the present paper is to place before archaeologists and allied workers an altogether different aspect of the problem. At Hastinapura (Lal, 1954 & 1955 :10–11) the sherds of Ocher Color Ware found in a very hard deposit of brown earth. In this deposit there was no ash, no flooring, nor any of the other signs one usually comes across in a regular habitational stratum. The frequency, too, of the sherds was very limited. One stroke of the big pickaxe might turn up not more than a couple of sherds; in fact, often there was none. The sherds occurred sporadically to a depth of about half a meter in the brown earth, which continued downward, merging imperceptibly into the natural soil. It was also observed that the upper part, 10-15 cm. in thickness, of the brown earth was darker than that below it, which might indicate that the top of this deposit remained exposed for a long time before the site was occupied by the succeeding Painted Gray Ware people.

At Bahadrabad (Krishnaswami, 1953 : 71) the copper objects as well as the pottery came from a deposit that lay about 6 meters below the general ground level—with no mound formation whatsoever. This overlying deposit consisted of sand, pebbles, and earth. The stratum that yielded the pottery and the copper hoard was about a meter in thickness and consisted of hard brownish earth. Available accounts show that there was no floor level or any similar sign indicative of a regular occupation.

Several years ago copper objects had been recovered from Nasirpur—celts, a harpoon, a hooked spearhead, etc.—which are now lodged at the Gurukul Kangri University Museum, near Hardwar. A recent examination of the locality showed that there was no habitational layer as such, but the natural looking, yellowish brown earth did contain sherds that, on the basis of their color and texture, may be regarded as belonging to the same general family of the so-called Ocher Color Ware. The sherds were found to occur sporadically and down to a depth of about 1½ meters below the general ground-level.

Jhinjhana has not so far yielded any copper object, but the section at this site is quite important. As at Hastinapura, so also here, the deposit bearing the Ocher Color Ware underlay the one yielding Painted Gray Ware, and the two stood in marked contrast to each other. Thus, while the Painted Gray Ware came from regular occupational layers with floors and habitational debris, including ash, charcoal, etc.

the Ocher Color Ware occurred in a deposit of brown earth devoid of any ash charcoal, or floor-material The sherds, too, did not lie in an orderly fashion, forming for example, a layer, but occurred sporadically. In this manner they went down to a depth of about one and a quarter meters. The soil itself showed some interesting features. The uppermost 10-15 cm. strip was dark in color. An examination of it was clearly called for, as it might reveal humic contents, suggesting that the top remained exposed for quite some time before the arrival of the Painted Gray Ware people. The next lower strip, about 30 cm. in thickness, was light or in color than the ones above or below it. Maybe it was leached in the course of time—a guess that is being checked through a chemical examination. Lastly, there was no hard and fast demarcation between the soil yielding the pottery and the one below it, although lower down *kankars* (nodules of calcium carbonate) began to make their appearance.

At Gadharona, the sherds of the Ocher Color Ware were picked up very near the surface, from a matrix of sand and silt. However, as the site seems to have undergone subsequent disturbance, it is difficult to say whether the sherds lay in their original matrix or whether they had been displaced and subsequently re-embedded in the present deposit.

The story at Achichchhatra is similar to that at Hastinapura and Jhinjhana. Thus, here too, below the Painted Gray ware strata lay a hard brown earth in which sherds of the Ocher Color Ware occurred sporadically, up to a depth of about 60 cm. (Government of India 1964/65). This deposit continued even lower, though without the sherds. All through, the brown earth did not contain any ash, charcoal, or other material indicative of a regular habitation.

At Atranji khera the Painted Gray Ware strata were underlain by a 15 to 40 cm. deposit containing Black-and-Red Ware, and it was below this that the Ocher Color Ware occurred (Government of India 1963/64:45-47). The deposit yielding the last-named pottery varied from 0·8 to 1·5 meters in thickness and consisted of yellowish brown earth mixed with *Kankar*. There were no signs of any regular habitation.

The sequence at Noh (Government of India 1964/65) is identical with that at Atranjikhera, for here too the Black-and-Red Ware intervened between the Painted Gray and Ocher Color Wares. The sherds of the last-named ware lay sparsely in a matrix of brownish earth that merged into the natural soil. The deposit was devoid of ash, charcoal, floor material, etc.

The preceding account presents a more or less uniform picture from all the sites, namely that the Ocher Color Ware occurred in a deposit of earth, varying from

yellowish brown to dark brown in color, often mixed with *kankar* and usually hard in texture, which did not contain any flooring substance or ash or charcoal or for that matter any other object indicative of the layer having been a regular habitational one. If this be so, a query arises as to how the earth came to be deposited and how the sherds found their way into it. The absence of habitational symptoms precludes human agency, unless it is argued that the earth was rammed down by human beings for some purpose and that the sherds came in along with it. This might seem to be all right theoretically, but sounds somewhat unrealistic, particularly when the same pattern is repeated at so many sites, located far away from one another. Thus, one has to look for some other explanation. At the moment, the following possibilities suggest themselves. There could, obviously, be many more.

The simplest explanation would be that the soil, a naturally laid one, developed fissures, like those occurring in the black cotton-soil of central India and the Deccan, and that the sherds, which had been lying about on the ground, found their way into it through the fissures. Such an explanation, however, would involve at least two assumptions, namely that (1) this soil is capable of developing fissures, and even very deep fissures, for the sherds have been found down to a depth of about 1½ meters from the top, and (2) there was some settlement in the neighborhood, the inhabitants of which left the sherds on the surface, say while ploughing the field or in some other way. On the first assumption the present writer is not competent to comment. All that he can say is that he has not seen this soil develop such fissures—maybe its sand content prevents it from so doing. The second assumption requires the existence, in each case, of a regular settlement of the Ocher Color Ware people somewhere in the neighborhood. As in this hypothesis the settlement site is not thought to have been affected in any way, it should still be available. The writer, however, has come across no such site.

If the above is not the likely explanation, what else would be ? At my request, Dr. B. B. Lal, Chief Archaeological Chemist, Archaeological Survery of India, and his colleagues have undertaken a detailed study of soil samples from Hastinapura, Jhinjhana, Ahichchhatra, Nasirpur and Atranji khera. Their preliminary investigations suggest that the deposits may have been water laid. Professor Fakhruddin Ahmad, Head of the Department of Geology, Aligarh Muslim University, and his colleagues, who independently examined the soil samples from Atranjikhera are, according to the excavators, of the view that "the area had been flooded by the river and remained waterlogged for a considerable period, which may explain the absence of the usual habitation marks" (Gaur & Hasan 1964: 5—6).

Now, if a flood is to be invoked to explain the nature of the deposit at Atranjikhera, the same will have to be done in the case of the rest of the sites. This would

involve the flooding of almost the whole of the upper basin of the Ganga, Yamuna and their tributaries. From Bahadrabad in the north to Noh in the south is a distance of about 300 km., and from the longitude of Jhinjhana in the west to that of Ahichchhatra in the east measures about 200 km. And if, on examination, similar deposits are found at the copper hoard sites further downstream, the flood will have to be nothing less than a "deluge."

Assuming for a moment that this turns out to be the case. one would naturally look for the causes of the deluge. Among various possibilities the following three may have to be considered.

(1) Incessant rain for a sufficiently long period might cause sheet flooding of the entire basin, because of the limited draining capacity of the plain and also of the rivers, which do not have a steep gradient. In such an event the settlements would be submerged, and while the lighter material, like ash, charcoal, etc, would float away, heavier articles like pottery, "copper hoards" and the like, would no doubt get mixed up with the muddy soil but would resettle in more or less the same area, without being carried far away.

(2) The flooding of the Upper Ganga Yamuna basin could also have occurred if, through some tectonic movement, a barrier was created across the river system somewhere lower down, such as, for example, has been postulated by Raikes (1965) for the flooding of the lower Indus basin, involving Mohenjo-daro. If it were a barrier of earth, it would soon be broken through by the waters and the deluge would be short-lived, but long enough to produce the kind of pottery-mixed strata referred to above. Or, a less drastic explanation might be that local tectonic movements led to widespread changes in the courses of the Ganga, Yamuna and their upper tributaries, resulting in widespread flooding.

(3) In a third possibility, one has to imagine a tectonic movement involving the divide between the Indus and Ganga systems, say somewhere near the source, where the Ghaggar and Yamuna basins come close to each other (Fig.1). Such a possibility comes to mind because we must also account for the drying up of the Ghaggar, which could have resulted from the diversion of some of its tributaries to a neighboring system, in this case that of the Yamuna. In this context it may not be out of place to mention two points. First, if the desertion of the Harappan site of Kalibangan is to be attributed to the drying up of the Ghaggar, as is not altogether unlikely, the latter event would have to be placed broadly in the first half of the second millennium B.C. (Lal 1962 & 1963: 212, 219). Secondly, the occurrence of the anthropomorphic figure, even though fragmentary, in the late levels of Phase IV at Lothal shows that the copper hoard culture was in existence in the first quarter of the second millennium B.C. (Lal (1962 & 1963: 220). Thus, at least from the chronological point of view an interrelation between the drying up of the Ghaggar and the flooding of the copper hoard sites may not be altogether incompatible.

BOOK REVIEWS

INDIA'S CONTRIBUTION TO WORLD THOUGHT AND CULTURE

Vivekananda Commemoration Volume (Editors : Lokesh Chandra, S.P. Gupta, Sitaram Goel and Devendra Swarup), Vivekananda Rock Memorial Committee, 12 Pillaiyar Koil Street, Triplicane, Madras-5, 705+XVI+lii pp., 200 half-tone and 19 colour plates besides numerous line-drawings. Price : Rs. 150.00.

A comprehensive volume dealing with the various facets of India's contribution to world thought and culture and incorporating the results of the latest researches, has been a desideratum. The publication of a volume on the occasion of the inauguration of the Vivekananda Rock Memorial at Kanyakumari, in September 1970, fulfills this long-felt need.

Dealing as this does with the history of Indian culture in general and its proselytizing influence in foreign countries, the Volume contains articles which primarily describe those geographical areas and periods about which tangible evidence is available in the form of monumental remains and literary traditions. In fact, a majority of articles deal with India's cultural influence as manifested in the art, architecture, religion, literature, etc., of foreign countries, both in the adjoining and remotely situated areas which are bound together by common cultural heritage.

The range of articles in the Volume is very comprehensive. Thus, while we have papers like 'Red Indians or Asioamericans: Indian Settlers in Middle and South America' (D. P. Singhal), 'India's Contacts with Africa from the Earliest Times' (Amba Prasad) and 'Indian Culture in Transbaikalian Siberia' (Lokesh Chandra), which give us an idea of India's relationship with these distant lands, there are certain papers which give an entirely new perspective, e.g., Jose Pereira's 'The Plan of the Hindu Temple and its Impact on the Baroque Church'. Likewise, the various aspects of cultural relationship with the lands nearer India have also been covered. Particular interest attaches to the very learned analyses in J. Gonda's article 'The Presence of Hinduism in Indonesia : Aspects and Problems', Ludwik Sternbach's 'Sanskrit Niti-Literature in "Greater India", and Pentti Aalto's 'On the Role of Central Asia in the Spread of Indian Cultural Influence'. To those unacquainted with the achievements of Indians in the field of physical sciences and medicine, B.V. Subbarayappa's 'India's Contributions to the History of Science', Jean Filliozat's 'The Expansion of Indian Medicine Abroad', Arjun Dev's 'India in the Eyes of Early Muslim Scholars' and W. H. Siddiqui's 'India's Contribution to the Arab Civilization' should give an inkling into this important aspect of India's glorious achievements in the past.

The movements of peoples and thereby of the ideas depend *ipso facto* upon the mobility which is proved by trade and maritime activity. S. R. Rao's 'Shipping in Ancient India,' K. S. Ramachandran's 'Ancient Indian Maritime Ventures' and Lallanji Gopal's 'Indian Shipping in the Mediaeval Period' are of value for those interested in this aspect even though there is duplication and, in a few cases necessary corroborative details have not been given by the authors.

Apart from these, there are articles of a different genre which have been included in the Volume which seek to analyze the course of Indian history. M. C. Joshi's 'Self-Renewal in Indian History and Swami Vivekananda' is an analysis of the factors which have provided substance and sustenance to the people of India and because of which they have been able to keep alive and intact the innate traditions despite the many setbacks they were faced with. N. C. Ghosh has shown in his paper 'The Impact of Indian Tradition on the Coins of the Alien Rulers of India,' the capacity for absorption and the almost charismatic quality of Indian culture which was imbibed even by the alien rulers of India.

It may not be out of place to mention here also the contribution of the Western Indologists towards the study of Indian history, culture and civilization. Nevertheless, some of their writings, which have added many a new chapter in the history of India, were not free from bias of one kind or the other. Kailash Chandra Varma, in his paper 'Some Western Indologists and Indian Civilization', has analyzed the writings of these pioneer scholars, some of which 'were vitiated by political or religious or theological bias' as a result of which there has been, at times, 'gross misrepresentation of India and the Indians, particularly the Hindus, in the Western world and specially in the English-speaking world and the United States of America.' It comes as surprise that even scholars of high calibre like H. H. Wilson and Max Mueller were not free from such bias. Varma's article is a pointer to those who rely solely upon these writings without critically examining them. In fact, there is an urgent need for re-evaluating their writings and, if necessery to re-write the history of India, without, however, succumbing to the narrow and partisan chauvinistic sentiments which are now characteristic of the writings of the Indians belonging to either a particular region or a linguistic group or creed.

In this review it is not possible to evaluate all the articles which deal with varied subjects and areas. It must, however, be added that the attempt to combine the results of latest archaeological researches with the historical studies is a commendable feature of this Volume. This has to be stated for more often than not, in most of the writings of the Indian historians the archaeological data are not properly included.

Those engaged in digging India's past would be particularly interested in the articles dealing with those periods or subjects which, in the current archaeological jargon, come under the purview of the pre- and protohistoric periods and about which

traditions—written or oral—are non-existent and are highly debatable in nature. It, therefore, goes to the credit of the editors of the Volume to have included papers, which although deviate from the main theme, have relevence to the subject.

The Aryan problem and the decipherment of the Harappan script are two such issues which, despite the many hypotheses and theories, still remain undecided or are highly controversial. B. K. Thapar's article on the Aryan problem not only deals with the various theories about their original homeland, but also establishes the point that 'the archaeological and anthropological evidences, represented by the various culture-groups of the second millennium B.C. are inconsistent with the philological evidence, and that *the available objective evidence for the movement of Aryans into India is still inconclusive*' (author's emphasis).

B. B. Lal has reviewed in his article the 'decipherments' of the Harappan script by scholars in the years immediately preceding the publication of the present Volume and has tried to prove conclusively that the direction of writing in the Harappan script was from right to left. While he has discussed the 'decipherments' by the Finns, Krishna Rao and Fateh Singh, he has omitted the equally important and interesting work of the Soviet scholars on the subject. This, along with his own views on the problem, would have been welcome to the readers.

Much new information is given by S. P. Gupta in his paper 'Prehistoric Indian Cultures in Soviet Central Asia' wherein he has tried to show 'that the dispersal of Indian cultures, at least in Soviet Central Asia, can be traced back to the earliest times, i.e., to the Early Stone Age.' This, according to him, takes back the history of India's contact to about half a million years on the basis of 'well-established archaeological evidence in the Soviet Republics of Tajikistan, Uzbekistan, Turkmenia and Kazakhstan.' While the similarities in the shape of tools found in the Soviet Central Asia no duobt led a Soviet scholar in calling the Boiykazghan assemblage as "the Soan Cultura of Central Asia", one would rather agree with what Prof. R. C. Majumdar has stated in his Foreword to the Volume that 'such studies of cultural contact between primitive peoples, being based solely on stone tools or other artefacts, can only give us very meagre and vague ideas on the subject of what we properly recongnise as human culture.' Much more tangible are the data pertaining to the contacts between the two regions in the Bronze Age in the third millennium B.C., which extend the limits of the Harappan Culture into the hitherto unknown areas.

This compendiam on Indian culture is one of the best-produced books on the subject and should find a place in the libraries as a most sought-after book. For the lay reader it should serve as an 'appetizer' and stimulating his interest for knowing more about India's glorious past.

B. M. Pande

GLIMPSES OF NEPAL WOODWORK

(published by the Indian Society of Oriental Art, New S ries, vol. III, Calcutta, 1968-69,) pp. 48 and 38 plates, price Rs. 25/-

by S. B. Deo

The book under review is the third volume of the Journal of Indian Society of Oriental Art, Calcutta. After Dr. Stella Kramrisch's well-known work *The Art of Nepal* this is a rich contribution to the Art History of Nepal. The author has skilfully dealt with the various characteristics of Nepal woodwork of the 17th-19th centuries. No architectural monument built earlier than the fifteenth century seems to have survived to this date.

Nepal, located as it is in the Himalayan abode, has had very intimate contacts with India, running through several centuries, although the flow of Tibetan elements in Nepal has not been less significant. In the field of art, however, the impact of Indian cultural traditions has been more pronounced. The author has presented some of the most representative and significant specimens of the art of woodwork at Patan, Kathmandu and Bhadgaon. The data that has been collected relates to three classes of structures, viz., the temples, the viharas, and the residential palaces and towers. The architectural peculiarities of wooden structures of Nepal comprise the use of heavy wooden framework, ingenious arrangement of load distribution with the help of structs and bracket capitals projecting window groups, multi-storeyed receding roofs, massive pillars and elaborate window and door-frames. All these were due to the meticulous technique adopted by the Newari artisans whose origin and antiquity is still a matter of controversy. That they could execute their skill with rather limited tools is indeed remarkable. While reconstructing the history of that art Deo has furnished all the technical details of the different members of the scheme of architecture, together with the decorative motifs such as the tympanum, the wall band, the cave board and the erotic scenes. Finally, the author has referred to the influence of south India on the history and architecture of Nepal—for instance, the Mallas who were proud of tracing their descent from Karnataka, invited pandits from Maharashtra. As for the architecture, the author has cited certain parallels from Indian counterparts—the Chalukyan bands of delicately chiselled fretwork, perforated stone-grills with diaper pattern, the square mesh with floral decoration, etc. Even in the domain of religious-motifs, the *purna-kalasa, naga-nagis, Ganga and Yamuna,* the *Kala-makara,* the *vyalas,* the *vidyadharas,* are all reminiscent of their counterparts in Indian architecture. Inspite of all these good features, the treatment of the subject is rather sketchy.

The book has been nicely printed with beautiful plates and a map of the Kathmandu valley.

Krishna Deva

PURĀTATTVA

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Pl. I, Inscribed Harappan potsherds from Chandigarh : Top, Ins. No. 1, Bottom, Ins. Nos. 3 and 4; on p. 52, please read pl. I instead of Pl. III.

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Editorial

This is the Golden Jubilee Year of the epoch making discovery of the Harappa Culture. As I go through the publications on Indian archaeology brought out during this period, I find that no other single culture attracted the attention of scholars so much as the Harappa Culture. Although a lot has been written about it, much remains unknown. Fortunately, our endeavour has not stopped. A dozen scholars all over the world are seriously engaged in deciphering the Harappan script. Many more are exploring and excavating new sites to know about the genesis of this great culture. A sizable number of scholars are engaged in understanding the socio-economic and politico-religious set up of the Harappans. Efforts are also made to find out the causes of its sudden rise and decay, without leaving any substantial number of traits in legacy. In any other country, all this would have given rise to an institute of Harappan studies to coordinate these world-wide researches and to put concerted efforts in unravelling the mysteries of one of the most glorious chapters in the history of Mankind. Even in the People's Republic of China there is an institute exclusively devoted to the study of the Tun-huang caves. But alas! when we are impervious even to the idea of an institute for archaeological studies in as big a country as ours with as diversified archaeological problems as those connected with the Stone Ages, Bronze Age, Early Iron Age, Greek contacts, Roman contacts, Chinese contacts, Persian and Arabic contacts, Sultanate monuments, Mughal edifices, temple, mosque and mausoleum art and architecture, early Church art and architecture, etc., the suggestion of a more specialized institute of Harappan studies is bound to be ridiculed. One really wonders how far Sir Mortimer Wheeler was right when he said: "Today, no part of the world is better served in archaeological matters than the Republic of India" (Foreword in B. Subbarao's *Personality of India*).

Whatever may be said of the actual state of affairs of Indian archaeology today no one can deny that we do lack a central research organization where we may create a powerful band of research workers tackling the problems of Indian archaeology with the multi-disciplinary (sciences as well as humanities) approach, an approach which has now been accepted the world over as the only valid approach.

Not that the efforts were not made or the proposals were not put forward in favour of an institute of archaeology but personal pride and prejudice always stood in the way of its creation. Will someone take the trouble of asking Professor B. B. Lal, one of the foremost archaeologists of our country, as to why he resigned as the Director General of the Archaeological Survey of India and joined the University of Gwalior

where, for the present, even the basic facilities of archaeological field work are not available, let alone a group of young archaeologists who would have formed a powerful nucleus round him and raised the standards of archaeological research in this country? Will someone ask Professor H. D. Sankalia why he has been insisting all these years on the bifurcation of the Archaeological Survey of India and the creation of a separate organization of all the research departments on a new pattern ? Will someone ask the authorities of the Jawaharlal Nehru University as to what has really happened to the proposals of Professors H. D. Sankalia and B. B. Lal, Dr. D. P. Agrawal and the Secretary, Prehistoric Society of India regarding the creation of a school or centre for archaeology in their scheme of things ? One can always argue any amount in favour of or against a proposal like this but only a diehard prejudiced mind will argue at any length against the urgent need of a central research body for archaeological researches in this country with at least one specialized wing, more or less exclusively devoted to the Harappan studies. Fortunately, one of our Founder-Members, Professor S. Nurul Hasan, is now the country's Honourable Minister of State for Education and Social Welfare. His love for and understanding of Indian archaeology need no credentials; under his supervision, Aligarh Muslim University has been excavating the famous protohistoric site of Ataranjikhera for the last eight years. We not only hope but trust that where all others have tried and failed he would put in all power under his command to fulfil one of the country's most urgent needs in the field of historical studies by creating a central research institute for archaeology. Probably, we will not be able to celebrate the Golden Jubilee in a more befitting manner.



The present number of the Bulletin contains, besides several articles dealing with the Harappan studies, specialized notes on a few important discoveries as well as rearrangement and reinterpretation of some of the existing data. We have, however, tried to introduce two new features on an experimental basis : an article on urbanization by Dr. D. K. Chakrabarti and a note on a terracotta medallion by Dr. Jagdish Gupta were sent to a few scholars whose interest in these subjects is well known. Not all of them replied, but those who did, deserve our thanks because their notes have elucidated many points, a few have raised even new issues, e.g., Shri A. Ghosh, in his comments on Chakrabarti's article, has raised a very basic question: Are we justified in using the term 'urbanization' in the Indian context? Similarly, Shri B. K. Thapar has also raised a fundamental question: Does urbanization lead to civilization everywhere? Prof. Sankalia also raises a very controversial point that the Cemetery H culture was not only 'the final stage of the Harappan and continuous with it; but that it must indicate the presence of foreign conquerors or immigrants'. Dr. D. P. Agrawal is no less controversial when he says that 'the Harappa Culture and the so-called pre-Harappan cultures . . . are in fact urban and folk (rural) facies respectively of the same

cultural phenomenon'. Elsewhere, M. R. Moghul (Ph. D. Thesis, Pensylvannia University) maintáins that the pre-Harappan cultures in Sind, Baluchistan and south Turkmenia, known so far, should be called 'Early Harappan'. Opposed to these are the views of Shri B. K. Thapar and Dr. S. P. Gupta who maintain the dichotomy of the Harappan and pre-Harrappan cultures known so far. Sir Mortimer Wheeler and Shri A. Ghosh feel that the Harappa culture is basically 'a culture of the plains' and by and large its genesis cannot be traced beyond this environment. Dr. Lamberg-Karlovsky looks to the indirect trade with West Asia as its source of inspiration. Dr. S. P. Gupta also comes out with a new theory that the Harappan political system could not have been based on centralized 'Empire and Provinces' concept; it was based on 'City State' concept, each town politically independent of the other and probably managed by a collective authority, some sort of oligarchy. Dr. S. C. Malik, while reiterating his plea for anthropological approach to archaeological researches and emphasizing his point that it is the archaeologist's own job to formulate theories, makes a stimulating observation: 'In the early days of archaeology when there was more speculation, there were less facts to support them. But, in recent years . . . there are more facts and less theory'. While Sarvashri A. Ghosh and D. K. Chakrabarti maintain that the Harappans did not leave any legacy, Prof. Sankalia elsewhere maintains that they did, in pottery, etc. (Foreword: *A Study of Harappan Pottery* by Omi Manchanda) I am sure, such questions will lead to further discussion and the members would like to send to the editors their reactions for publication in the next number.

The second feature concerns discussion on important theories concerning the well known problems of Indian archaeology. In the last number, on the problem of the original home of Indian megaliths, Dr. S. P. Gupta propounded the 'Coastal Migration' theory and speculated that the Gulf of Oman may be the original home of Indian megaliths. Shri K. S. Ramachandran in his rejoinder refutes Dr. Gupta's arguments and propounds 'High Sea Migration' theory. It was again sent to Dr. Gupta for reply. Both are published here. Further reactions for a fruitful 'discussion' are welcomed. If approved by the members, the editors will be glad to include these two features in the Bulletin regularly. We have also added a new feature of 'Press Cuttings'.

In this number we are publishing an up-to-date list of the Fellows and Members. Any error whicht might have crept in inadvertently may be communicated to the Treasurer of the Society.

We are extremely grateful to Sri Arjun Kumar of M/s. York Printers, I.N.A. New Delhi-23 for his nightlong work and extremely affectionate nature and in bringing out the Bulletin within a record period of three months.

—*S. P. G.*



Prof. M. Seshadri (14/10/1914—25/7/1972)

OBITUARY

DR. M. SESHADRI

(14-10-1914 — 25-7-1972)

M. Seshadri was born in 1914 at Mayasandra in Tumkur district, Mysore State. After his early education in that village he entered the Maharaja's College, Mysore. He had a distinguished career as a student and passed B. A. (Hons.) degree in 1937 with a high First Class, bagging three gold medals earmarked for best performance in History, Economics and Political Science. Obtaining Masters degree in 1938, he served as a teacher for sometime in a higher secondary school, and then joined the Maharaja's College as a lecturer (1931). This brought him into close contact with Dr. M. H. Krishna, who was then the Professor of History in Maharaja's College and also the Director of Archaeology in Mysore, and thence Seshadri began to lean more towards archaeological studies. He worked for some time as a Technical Assistant in the Mysore Archaeological Department also. Two years later he joined the band of young archaeologists who were to be trained for the first time in India in scientific methods of archaeology by Sir Mortimer Wheeler. He worked in all the excavations conducted by Wheeler, at Taxila, Arikamedu, Brahmagiri and Harappa, and later in the excavations at Sisupalgarh conducted by B. B. Lal. In 1949 Seshadri went to England for higher studies in the Institute of Archaeology, London and secured Doctorate Degree in Archaeology for his thesis "THE STONE-USING CULTURES OF PREHISTORIC AND PROTOHISTORIC MYSORE". He returned to Mysore in 1952 and joined the newly formed Department of Indology as Assistant Professor and became the Professor and Head of the same department in 1956. He was also offered the post of Director of Archaeology in Mysore to work in ex-officio capacity. Till then, in Mysore, archaeological studies meant only the study of art and epigraphy. A suitable atmosphere to receive and appreciate the branch of archaeology in which Dr. Seshadri had specialised was not at all there. Despite these difficulties, Dr. Seshadri persued his subject of interest and conducted excavations at the magalithic site of Jadigenahalli, Bangalore district (1959-64), besides exploring many a prehistoric site. In 1970, he commenced excavating Banavasi, an early historic site in the North-Kanara district; but could not complete the same. Death snatched away this great scholar on the 25th of July 1972, when he had not yet completed his 58th year.

Dr. Seshadri was a man who never liked to compromise with the raw and the mediocre, whether it is a question of academic work or social dealings. With the background of his extensive training under such masters in the field as Sir Mortimer Wheeler, Gordon Childe and Frederic Zeuner, he wanted to introduce a high standard

of work in his area of activity. The circumstances in the institutions he was working, he used to say, did not present him the necessary means and the environment He was a bit disappointed with the set up of the State Archaeological Department, and much so when the Advanced Centre for Archaeology originally proposed for Mysore by the University Grants Commission did not materialise. In later years these made him to turn more towards the study of Art. Despite these, he succeeded in introducing the study of Prehistoric archaeology in the University of Mysore, and had planned to organise excavations every year and to start a good museum of art and archaeology.

Dr. Seshadri is remembered with gratitude and respect for his high qualities of head and heart. He was a man ever ready to help his pupils in difficulty. The thoroughness in the subjects he taught, the breadth of vision and insight he commanded made him a great teacher; it was a revelation and real education for his students to hear him in the class room and in the field. He belonged to that school of scholarship which insisted on thoroughness and precision in academic work.

At the time of his death, Dr. Seshadri was a Senior Professor and Head of the Department of Post-graduate Studies and Research in Ancient History and Archaeology, in the University of Mysore and Director of Archaeology, in Mysore. He was a Fellow of the Royal Anthropological Institute of Great Britain and Ireland, a member of the Indian Historical Records Commission, the Central Advisory Board of Archaeology, the Central Advisory Board of Anthropology, and Chairman of the Archaeology, Numismatics and Epigraphy Sub-committee for the compilation of Kannada Encyclopedia. His publications include, *The Stone-using Cultures of Prehistoric and Protohistoric Mysore* (London, 1956), Report on the Jadigenahalli Megalithic Excavations (Mysore, 1960), Epigraphia Carnatica Vol. XVII (Mysore, 1965), Annual Report of the Mysore Archaeological Department 1947-56 (Mysore, 1964). The Report on the excavations at T. Narasipur (Mysore, 1971) and two books in Kannada on the Indus Culture and History of Great Britain, besides a number of articles.

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THE ROLE OF THEORY IN THE STUDY OF ARCHAEOLOGY IN INDIA

S. C. Malik

A discussion of theory involves the fundamental or philosophical foundations of any discipline. But anthropologists, historians and archaeologists do not generally consider philosophical explanations of empirical data as a problem in itself. They have not often treated it as an issue of relevance to the proper explanation of their respective discplines. Of course, we are not suggesting a taking over of the problems of philosophy. But we should have some discussion of this aspect of our work for the development of theory in archaeology, so that research workers are stimulated to be more self-conscious about the explanations they advance with regard to their described material. It is true that the problems of methodology in archaeology in terms of field-work, etc., have been greatly sophisticated in recent years. But a sophistication in methods is not the same thing as a sophistication in theory. Methods are mainly useful for field studies, and can rarely be used for comparative purposes; they are only a means for the verification of data, in order to test our theories and our hypotheses. Thus, methods cannot tell us about the use of new ideas, they can only warn us of the pit-falls in our conceptual thinking.

The use of 'theory' has been carried out in a variety of ways; sometimes in terms of method as stated above, sometimes as a synonym for a concept or a model, sometimes for an inductive generalization and sometimes merely to lend tone or dignity to the obvious. But these meanings do not constitute theory. It is therefore, necessary as a first step for all of us to make some tentative observations on the nature and role of theory in archaeological research and inquiry, just as anthropologists have been trying to do in recent years in their own discipline. Of course, it is seldom possible to arrive at an agreed decision with regard to this problem and that should not be attempted. Nevertheless, it is important that we must clarify some major points, so that many of the issues and problems which are causing confusion can be partly cleared up. This will also help us to clearly define many terms which in fact have arisen not from any theoretical considerations as they should have, but from the empirical side of the subject.

The role of field work in archaeology cannot be overemphasised since, during the last one hundred years or so, it is because of field-work that the discipline has gained stature. But field-work today has not remained simply a means; it has become a kind of *touch stone* at the expense of almost the total exclusion of any theoretical development. This is not to suggest that field-work is not essential. It is undoubtedly of the utmost importance. Nevertheless, there is a kind of *mystique* that has grown around field-

work, and it is practically used as a slogan in the discipline "first field work, then theory". Again, this is not an attempt to denigrate field-work, rather, it suggests, a shift-at least by some of us—towards creative speculation; using field-work as a means rather than the end as it often appears. To reiterate, field-work is excellent for data gathering and as a hypotheses and data-testing device. But all field research must be taken up with a self-conscious interest in contributing to wider generalizations and theoretical formulations. The contribution of archaeologists should be not only to history but also to sociology, anthropology, etc., and we should not be content with comparing and contrasting our empirical evidence. To repeat, it has not been suggested that field-work need not to be advocated, or it is to be deplored or abandoned (my earlier work has created this misunderstanding; Malik S. C. : *Indian Civilization : The formative period (A study of Archaeology as Anthropology)*, 1968, Indian Institute of Advanced Study, Simla), because it is through field-worke alone that archaeologists have been able to compile a first hand rich corpus of data and a broard variety of cultural arrangements and adaptations. It is obvious that such a corpus could not have been put together by any other means.

However, along with the positive contribution, which an emphasis on scientific field-work has made towards enhancing the stature of archaeology, there seems to have come about a certain consensus for completely ignoring the development of archaeological theory. There has been a strong tendency for research workers to completely immerse themselves in describing and classifying empirical evidence. In fact, the uniqueness of the evidence obtained by each research worker has been greatly emphasized, as if this was the main mission in order to contribute to the discipline. It is, of course, true that the sheer weight of archaeological evidence and the detailed preference for field-work has prevented us from making any generalizations, specially as many workers have retreated in the face of such formidable evidence. Thus, ironically, archaeology's empirical riches which have been recovered scientifically in recent years have tended often to act as a deterrent rather than act as a stimulant towards theory formulationals another major reason as to why there has been a reaction to theory is that new facts provided by field-work have destroyed many theoretical speculations. Therefore, many archaeologists have developed a distaste for it, or have begun to be distressed by all conceptual formulations and generalizations that are-and have been-made before facts are unearthed. However, this is a wrong attitude which turns a blind eye toward very significant lacunae in our discipline.

There will not be much dispute (or should not be) about the assertion that ultimately the main goal of archaeology is to provide a body of reliable knowledge about various socio-culture phenomena, i.e., how these came into being, how they are

maintained or altered over time, or how these phenomena inter-relate. But although many or most archaeologists have at one time or the other reflected on these problems. they have generally tended only to tackle it from the view point of 'narrow' empiricism. General opinion has so far favoured the notion that if one simply observes and collects the 'relevant' facts then by a process of induction and synthesis a theory will somehow emerge to fit in and account for the facts. This view has led irrelevantly to the dichotomy of factual knowledge and (versus) theoretical knowledge more sharply than is warranted, and to the idea that factual knowledge is somehow solid, basic and reliable. But, as it has been stated by many and emphasized by me; facts do not either speak for themselves or exist by themselves. Facts are always the result of a process of ommission, selection and inference; what we collect, observe and describe is always governed by a viewpoint or some theoretical frame-work whereby we try to make our research material meaningful. It is for this reason that there are almost invariably differences of opinion as to what the various archaeologists observe and describe. In fact, each one of us tries to interpret and inter-relate the facts which we observe according to our 'theories' or 'ideas'. There is no need to deliberate on these points for too long, since many philosophers of science, on both logical and psychological grounds, have shown this existence of facts by themselves to be a mistaken notion.

Theory is necessary not only to organize the findings of research so that basically it makes sense but also in order to determine what questions are to be asked. Scientific knowledge does not emerge by itself from empirical research unless it is in terms of certain solutions in answer to a logically coordinated system of the issue invovled. Theory, therefore, must always be prior to the empirical observation of the facts. Indeed, facts do not have an existence as a part of scientific knowledge outside such a framework. Questions must be asked before answers can be obtained and, in order to make sense, the questions must be part of a logically coherent theory. Whether this theory is thrown out later by itself or by the facts supporting it, or is accepted totally for a while, is besides the point.

The debate between theory and facts, as stated above, has arisen, chiefly, from the writings of the philosophers of science which archaeological thinking has inherited. But the development of theory in sciences, in philosophy, or even to some extent in the social sciences, has been considerable. Indeed, it is not such a simple thing when we wish to encourage the development of theory in archaeology because there are special problems involved in archaeology which arise not from the immaturity either of the discipline or those who practise it. This also arises altogether from the inherent nature of its data. When philosophers of science speak of theory, they mean a set of general statements hierarchically and deductively interrelated. Deductive theory is considered

to be the 'ideal' form, and the advantages of the kind of theory are, first, that all statements in such theory tend toward universality, and all relationships are deductive; hence, powerful mathematical techniques can be employed. Of course, to develop a theory as in the physical sciences is not such an easy matter even in sociology and in the other social sciences which cannot really claim any thing comparable to the physical sciences. But generalizations both in the physical sciences as well as in anthropology are probabilistic in form, except that the subject matter of the former promotes greater statistical reliability and, therefore, these generalizations can often be considered as universal hypotheses for all practical purposes.

However, even if it is clear that the differences between the physical and historical and social sciences in the development of theory arise from the inherent nature of the data and not from the immaturity of the discipline and, admittedly, even if there are some special problems which both the anthrpologist or/and archaeologist face in formulating theories as well as in gaining consensus for them because of this matter of the complexity of the data and its interpretation, it should be made very clear that this complexity is not simply an "ontological attribute of the external world", i.e., of the data alone. In fact, the problems one faces, to a very great extent, depend upon the relative knowledge we have about the external world. Therefore, no empirical phenomena are ever what they are. These keep on changing with the kind of questions we ask of reality in general or in particular (historical or archaeological); depending specially upon the kinds of conceptual pictures that we build up of this more or less complex reality. Thus, the real problem of both the anthropologist and the archaeologist has been that the questions which they have traditionally asked have not satisfactorily given the solutions. It is also a difficult problem since we deal with human societies—complex systems—which involve the interaction of many more and different types of variables than are usually handled by those working in the sciences. The latter have fundamental quantifiable variables which social-scientists and historians do not necessarily have within their grasp. It is also not possible to invent these variables, as we deal with human relations which are not made evident intuitively; this is very much possible in the physical or natural sciences. The interaction of factors and form has necessarily to be distilled and abstracted from innumberable human events, and the selection of these events (archaeological or anthropological) depends on one's experiences, cultural background and biases. Obviously, it is a very complicated and laborious process. But, by and large, there is hardly ever any attemp to clearly state postulates, terms of reference, etc. in order to exhibit the abstractions from a rich variety of events. This holds true for the other disciplines in India also. But in archaeology by the time one gets around to doing so, these appear to be very far-fetched, specially because several limitations are inherent in our discipline due to

the material, techniques, etc. However, a theoretical orientation is essential for any planning in our research programmes, as well as in the interpretation of the material. Even some basic definitions require a conceptual framework: such as the definition of terms like, village, group, nation, assemblage, period and sub-periods, etc., which we so often use. Moreover, our use of comparative methodology has not been for postulating any fundamental theories or concepts; it has been mainly used for solving problems of chronology and spatial interrelationships.

One of the criticisms of advocating theory formulations is that one is often accused of following an ideology. Of course, it also has been questioned whether laws or theories are possible or should be formulated at all. But these criticisms do not state as to why the idea of theory-making is wrong basically, specially because it is from the humanities and the social scientists that greater explanations are required either to explain current events, or to resort to historical explanations inorder to support many social, economic and political problems of our day and age. Therefore, we simply cannot avoid theory and ideology. Moreover, even if theory is taken to mean any knowledge which has been so organised that facts are subsumed under some general principles, then, whether we like it or not, all of us attempt to do this albeit implictly. This had also been the case with anthropology, until recently, and it hold equally validity for archaeology.

"Anthropology has been the most comparative of the social sciences. But the failure to exploit more fully the potentialities of comparison as well as the failure to cast knowledge in theoretical forms has made for a great deal of wasteful reduplication. Scattered throughout anthropological literature are a number of hunches, insights, hypotheses, and generalizations, some tentative and limited, some of broader scope and more generally accepted. But they tend to remain scattered, inchoate, and unrelated to one another, so that they often get lost or forgotten; and the tendency has been for each generation of anthropologists to start out fresh without any very clear sense of what is known about an area of research. Among the consequences of this failure is that theory-building in cultural anthropology comes to resemble slash-and-burn agriculture... it stems from the failure of anthropologists to be more self conscious about the logical properties of theories and about what it means to assert that a theory 'explains' a set of phenomenon. A more explicit awareness of such issues would, if nothing else, greatly reduce the output of what often passes for explanation in anthropology. Here, we believe, anthropology may learn a great deal from philosophers of science, provided that their learning is somewhat tempered by the knowledge they have of their own discipline, and not the logicians or the philosophers' ..(But) this should not over a we them to unnecessarily constrict the discipline rather than liberate it ..... if

we permit methodology to suggest the problems we deal with rather than allowing problems to determine the methodology, we clearly run the risk of becoming more precise about a continually narrowing range of cultural issues of phenomenon". (Kaplan, David and Manners, Robert: (Editors) *Theory in Anthropology*. 1969. p. 11.)

Thus even if we feel that some questions are unique to archaeology, there are many more in comon with anthropology, sociology and also with some of the physical and natural sciences. Therefore, this matter of keeping the questions well-sorted out is important. For instance, we should ask, when and where were innovations and changes introduced, and why is it that certain innovations are made in certain cultures and not in others, or why in certain historic periods and not during others, etc. All these questions are essentially related to the rates of the patterns of innovations, culture-change, etc., in general; and not always about a particular culture at a particular time, These problems are especially important with regard to our understanding of India, its culture, society and civilization; which can only come about as a product of an informed and creative imagination. The traditional questions we have been asking are infact leading us to dead ends even in terms of locating greater empirical data. It is for this reason that we need to look afresh on how cultural systems and interrelationships work in India, specially because we have so far mostly explained India in terms of its religion, its moral philosophy or the superstructure. However, this understanding will not be attained by means of our discpline alone, specially because of its limitations. But these limitations, moreover, are imposed by a limited sphere of conceptual formulations. Therefore, it is no reason to not to try or to abandon our theoretical quest towards sophisication, in order to deal with phenomena as such. It is very much besides the point to state that we cannot proceed this way or that way, and that we ought not to proceed in this until there is enough field-work done and enough facts collected. But when is it that field-work is enough or completely done ? For, whether we like it or not, the brute fact of the matter is that at any point of time, in doing empirical research, most of us often proceed by this or that way of thinking, in terms of some concepts and theories howsoever tentative or ill-baked these may be. But it is a curious fact that when cultural phenomena are explained in terms of themselves in the context of empirical work, few eyebrows are raised. It is only when we start discussing matters in philosophical terms, which we must, that all the trouble begins !

Thus, in this emphasis on interdisciplinary work, we must realize that the differences between anthropology and history are only those of techniques, emphasis and perspectives and not any significant differences in terms of methods and aims. In this sense, it is equally incumbent upon anthropology to work on historical problems in

the light of their work, on the latent structural forms and universals with which they are so familiar. Archaeology cannot remain, similarly, merely historical in outlook, or prehistoric archaeology, since it uses scientific and technical studies, become like the physical or natural sciences; and, for that matter, archaeology does not have to become all social-scientific by rejecting historical methods or histriography. But, as we shift from the descriptive, data-gathering phases to analysis, interpretation and theory, it is inevitable that realignments will come about. The prescription I suggest is to adopt different approaches towards the study of archaeology. We should try to integrate the newer approaches with what may be called the traditional historical ones which we are already using. Thus, the plea I would make is to strengthen our weakness with the aid of other disciplines, specially in theory and interpretation, so as to help enhance the status of our own discipline. In all this, a greater number of debates and discussions, will be helpful in the newer developments and in the raising of issues with regard to Indian culture and society. In this way, new dimensions will be given to our discipline which is 'flat' in many respects. We must allow our discipline to ask many different questions, so that we are able to see cultures as wholes, while at the same time developing the interests of archaeology in terms of culture-regions-and-areas, in cultural processes and in cultural development. In the development of these formulations, of how one arrives at generalizations, we require repeatable units which can be indentified. Our attempts, therefore, should see to it that cultural data fall into patterns of varying types which one is at the same time able to trace through space and time. To some extent, we do attempt this. But the crucial point is the self-conscious development of theory and methods of comparison and analysis; for this, both anthropological and historical methods are required.

Until now what I have stated has been a statement about the general importance of theory, methods and models in archaeology. It is likely that I will be asked to demonstrate it, first, in the field, before anyone is convinced about this emphasis on theoretical research for workers in India, and I criticise any further others for not being 'sophisticated' enough as far as theory or model-building is concerned. At least, this has been the reaction of some to my book which has clearly stated that the ideas therein are only the first steps towards the building up of certain trends in archaeology; the logical second step of this would be in the field. The book was not supposed to be a complete work by itself, nor in it any conclusions or final judgements. It was simply an exploration into the realms of ideas in order for us to systematically plan the future of archaeological work in India in terms of socio-cultural concepts. But this cannot be demonstarted single handed in the field. It requires team work and an organization which is receptive to these ideas. This kind of planning is very imperative in academic disciplines, specially for enunciating guide-lines which should be in the

form of problems and questions within certain theoretical frames of references. But it must be borne in mind that these problems will keep on changing as there is progress in the discipline itself, as also in anthropology, sociology and the other historical and social sciences.

The point which I wish to emphasise is that the Indian archaeology has, in fact, been following conceptuals models and theoretical frameworks—albeit implicity—in the integration of archaeological material. There is no denying this fact: so that there should normally be no opposition to model building or theory formulations as such. In the early days of archaeology when there was more speculation. there were less facts to support them. But, in recent years, as a reaction perhaps, there are more facts and less theory or, if you wish, even scientific speculation which should have been there. This should be the logical course because of the tremendous growth in knowledge with regard to the origin and development of human societies, or about their structure and function, along with the vast storehouse of new archaeological and historical evidences.

The models and concepts which we have followed in India so far, in integrating and interpreting our data, have been of generally the "unilinear evolutionary" "descriptive—historical" or the "diffusionist" kinds. For example, we have tried to show spatio-temporal correlations of a culture or cultures so as to explain the spread or diffusions of cultures, or the various 'waves' of cultures or simply of cultural (historical or archaeological) traits, etc. This we have done, most often, for purposes of indicating affinities or differences in order to establish links. Similarly, the historical-descriptive approach has also been used in order to relate our data to the known literary records or mythical stories. These 'mythical' or historical records we have tried, to refute or corroborate, by archaeogical means; viz., the Aryan invasions, or the Dravidian and Aryan conflict, the Puranas, the Mahabharata and the Ramayana. or tracing the political histories of the kings, etc. More recently, we have been placing cultures in an evolutionary sequence and also in terms of socio-economic and technological developments, by using the physical and natural sciences; thereby, calling our interpretations as scientific explanations and our discipline a science.

The use of any of the above valid models, concepts and scientific aids are perfectly justified, since we should be free to use any theory or model we wish to do. in order to understand our facts. But the point is that while we have been using these models and aids, the efforts has not been a direct and conscious one arising out of the current developments, out of thought processes which we may call as philosophical or scientific theorizing, even after facts are recovered. Moreover, the models and concepts

we have used are seldom explicitly detailed by archaeologists in India, in any of the publications; that is, explanations of how and why one has been using certain concepts — even hunches and ideas. But by this I do not mean the old way of simply stating that we "do archaeology because we want to know our background, our past" and leave it at that. But what past, which aspect of it, for what purpose, explaining the validity and legitimacy of our approach, etc. are questions which have to be clearly propounded and stated by archaeologists, if not by all them by at least some workers. However, this kind of exercise of thinking and working, I feel, we must begin to instill in our students and the up and coming archaeologists so that, every now and then, we can meet to discuss these problems and ideas which belong to the ever expanding knowledge of life in general and in particular about human societies.

It is very imperative for us to think along these lines because, in the case of India, we have yet to achieve a clear-cut understanding of Indian society, culture, and its civilization. There are, of course, many who claim that they do know and understand it. But quite apart from the understannding we have in terms of India's religions, "the spiritual heritage", the "Great tradition", there is comparatively little that we know in a social scientific manner specially about the early periods. The trouble is that we take it for granted what India is or was, its cultural boundaries or how have these socio-cultural process of Indianization of the sub-continent have taken place, so as to give rise to what we think is India, that elusive undefinable entitity which we define as such...

In order to refine all these methods, to probe deeper into these problems towards the realization of our goals about understanding India, we must employ conscious theories and models—whether borrowed or developed by us is not important. The point is that whatever we employ we must explain and relate explicitly to our own material and data, not implicitly as we do at present. The effort must be to consciously build a system of theorizing and analysing, and archaeologists must state the validity of their arguments and clearly demonstrate it in a convincing manner instead of considering facts, to be self-explanatory.

It is not possible to elaborate here in any details what I mean, since I have hinted at these possibilities earlier on in my book. But, briefly, in my book is mentioned the evolutionary model for the early cultures of India which we could further modify for our purpose; then, there is the model of socio-cultural integration which we may use in terms of our own areas; and, we could use the cultural-ecological model in terms of the cultural-regions and culture-area concept so that it becomes possible for us to work in some depth in certain areas or subareas which will form the units of our study. In the last case we could, within these units, examine the working and functioning of

archaeological cultures in terms of the methodology suggested by David Clarke or Binford, or in terms of our own ideas. I need not detail current methodology in archaeology since most of us are familiar with all this.

The model which I prefer most and which would be more appealing to many also, I hope, is the one of understanding Indian civilization as such and, within it, the cultures and societies that go into the make-up of it. The models in this frame-work would thus be that of seeing the interaction of 'the Great and Little traditions', or the one of 'village-folk-urban interaction'; all this could be worked within the frame-work of culture-process, of institutional exchanges, etc. This would, further, have to be worked within the framework of culture areas and ecological zones. Once we go about our work within this systematic manner, we will be able to trace historical origins in a much more satisfactory manner than hitherto, and even fit it with other evolutionary models which we wish to employ. In all this, the role of historical materials will be no less crucial, and the problems of historical description would be subsumed under these larger problems of understanding Indian socio-cultural phenomena. This is as it should be, I feel, since our goals must be towards some kind of generalizations that help us in the explanations of India for the understanding Indian society and culture-historical development being included in this.

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THE 'CEMETERY H' CULTURE

H. D. Sankalia

First found by the late Madho Sarup Vats to the south of Mounds AB and J at the foot of Mounds D and E on either side of modern irrigation channel at Harappa, the Cemetery H Culture is the least known of the protohistoric cultures of the Punjab in terms of its extent or distribution and about the people whose cemetery it is supposed to represent.

No structural remains of the Cemetery H people were noticed by either Vats or Wheeler. Wheeler, however, agrees with Vats that there are two strata of burials even though there might not be much chronological gap between the two.

Of these, Statum II, the lower and earlier one, was described 'as earth burials' by Vats ; the bodies of the dead were found at an average depth of 6 ft. from the present surface. (How these were placed there, whether by digging a pit, has not been described.) The bodies were kept in an extended position. sometimes with knees slightly bent. The normal orientation of the body was from east to west or north-east to south-west, though there are a few exceptions. In a few cases, only food and drink was provided for the dead. Hence in a few cases no vessels are found ; in others they are usually grouped near the head:

A look at these vessels will give an idea of the needs of the dead and their prevailing fashion. The most common ones are:

(i) water pot (often closed with a flask or handled lid) ;
(ii) a coconut-shaped vessel with long, splayed out neck called *kalasa* by Vats ;
(iii) pot-bellied vessel—*ghara* ;
(iv) open-mouthed, round pot with a small standard base ; and
(v) squat, open-mouthed vessel, with a ring base.

Among the uncommon shapes are :

(i) a bowl with or without a flask inside ; and
(ii) food plate or dish with or without stand ;

Of rare occurrence are :

(i) flasks ;
(ii) saucers ; and
(iii) flat covers

In Statum I, pot-burials were found. Since these burials overlay the earth-burials and almost underlay the present surface, many of the pots were found crushed. However, all these pots were invariably large in size. Their height varies from about 13" to 24" The three main shapes in these are :

(i) a round pot, with the lower part plain and roughened by finger decoration or painted and flanged at the neck ;

(ii) an ellipsoid pot with a ring base ; and

(iii) carinated and painted pots with flanged neck. All these burial pots were originally covered with inverted bowls.

Do these types of burials represent the remains the two different post-Harappan Cultures? What was the relation of the culture(s) to the Harappan on the one hand and the later cultures in India, particularly in the Punjab on the other? On this problem not much thought seems to have been given, because attention was primarily concentrated on the choronological position.

However, some more light may be thrown on this question, after taking into consideration :

(a) the nature of the Cemetery H pottery, particularly the paintings on pots of Stratum I ; and

(b) the shapes of pots in Stratum I and II, and their relationship with those found in the Harappan and in the later Indian pottery.

It is conceded by all that though the burials in Stratum I and Stratum II show a marked difference in burial customs and practices, these may still be regarded, as Wheeler[1] said, "as successive phases of the same culture", because of a community of technique in pottery and patterns on it. He further says that "the difference in the ceramic shapes of the two strata of the cemetery is functional rather than cultural, in that large pots of Stratum I were meant to contain the actual burials, whereas Stratum II served only as grave-furniture. The ware in both is brunt deep-red and has a notably bright red slip. The painted designs in jet black are often slightly blurred at the edges as though they had 'run' on a wet ground. The majority of the characteristic patterns such as star, fish, peacock, ox and goat are common to both the strata. Stratum I shows larger groups of these with obviously mythological significance, while on the smaller vessels of Stratum II the designs seem for the most part to be purely decorative but this difference may reasonably be ascribed to difference in size and function." Wheeler thus concluded that "the pottery from Cemetery H is essentially alien in type,

technique and decoration to that of the true Harappan Culture. Its distribution is at present unknown but it has been identified also at Lurewala and Ratha Thesi in Bahawalpur State.[2] Its fabric has finer texture and a darker red tone both in the core and in the slip Its decorative motifs do not include the intersecting circle, scale and other patterns, characteristic of the Harrppa Culture. These facts, combined with the structural evidence noted earlier and the thick deposit intervening between Cemeteries h 37 and H, firmly indicate a time interval between the two cultures "[3]

The structures referred to above are indeed fragments of poorly constructed buildings, presumably dwellings with walls sometimes only one brick in thickness. It is indeed surprising as to how these structures are associated with pottery of the 'Cemetery H' industry. For, if the occupants of these thinly-built houses were poor, and squatters how could they produce this fine pottery, which is superior in technique and decoration to that of the Harappan? Wheeler once thought (by implication) that the Cemetery H belonged to the Aryans who had destroyed the Harappan Culture. His argument is no longer valid since no less than 7 feet of debris intervened between the two deposits and therefore the Aryans could not have destroyed Harrppa.

Apart from the authorship of the Cemetery H, can anything be said about the people, their racial type and above all their way of life?

Without identifying the Cemetery H people with any particular racial stock, the late Dr. Guha had said that the skulls from Stratum II belonged to a large-headed dolicocephalic type with well-developed supra-orbital ridges and high cranial roof, long face and prominent nose. These features, according to him, showed a continuity of the Indus people of Harappa and Mohenjo-daro. However, in the pot burials of Stratum I, Guha had observed an element of small, low-headed people, and this, Vats thought, indicated 'a definite admixture' which might be due to racial or cultural up-heaval brought about by the immigration of a foreign people into this district of the Punjab.[4]

So much about the racial types. If, however, we turn for a moment to the pottery found in the two strata, it shows three things:

First, a workmanship finer than that witnessed in the Harappan, and this in all the aspects of the potter's art : (a) preparation of the clay, (b) potting, and (c) baking. The Harappan was already known for its thick, well-baked pottery. In addition to all this, the Cemetery H pottery is painted. And there are not just haphazard, unconnected patterns and designs, geometrical and natural. Paintings depicted on the large pots of Stratum I indeed relate a story, may it be mythological. But these are our earliest

full-fledged paintings, important both from the point of art and the story they relate. Whether the paintings were done by the potter's wife (whose work this is usually believed to be) or the potter himself or someone else, the whole story must have been first sketched out and then carefully transferred on the broad shoulder of the pot. And the artist knew how much space each actor in the story was to be accorded, and accordingly drew it or him, small or large, full or in outline. The exact interpretation of he story or stories these paintings relate, will remain problematical until some more data, and in particular writing (which can be read), of the Cemetery H Culture is found. Vats very hesitatingly has drawn our attention to certain passages in the tenth *mandala* of the *Rigveda*. The elaborate painting on a burial pot was meant to portray what was believed to be a dead person. The hound on the left hand scene, may, like the two hounds of Yama, be the hounds of Hades and that the right hand scene, where the cattle are now decked with trident, crests, depicts them in 'the Abode of Bliss' after they have passed through the intermediate Hades. The goat between the two scenes was a sort of 'path-finder', and a deified intermediary, an inference which may be drawn both from its large size and the crests on its horns.[5]

However, Vats was careful enough to observe that though the paintings recalled some of the rites, rituals and beliefs contained in hymns 4, 16, 18 of the tenth *mandala* of the *Rigveda*, still there was one vital difference. The *Rigveda* describes cremation rites, whereas these paintings are connected with post-exposure fractional burials.

At the moment one cannot press this parallelism between the two beliefs any further, but they are pregnant with great possibilities, which are briefly discussed here.

If in the future it can be proved thet the Cemetery H belongs to Aryans or the people described in the *Rigveda*, then it might be said that they had some hand in destroying the Harappan civilization, for, as Wheeler has said, these are the only people who are known to succeed immediately the Harappans. Secondly, whether they can be accused of this great event or not, their pottery was finer than that of the Harappans, and thirdly, their potters could relate the story of the dead so well and in such a short space.

Though we are not sure of the identity of the Cemetery H people, as we are not of the Harappans and many others, still we may resonably infer about their way of life from the shapes of their pottery found in the two strata of the Cemetery. For this we shall rely primarily on the work of Vats, which was more extensive and whose report on the collections is also detailed. Fortunately, this is confirmed by the small collection of Wheeler.



Fig. 1 Pottery Types from Cemetery II (after Vats)

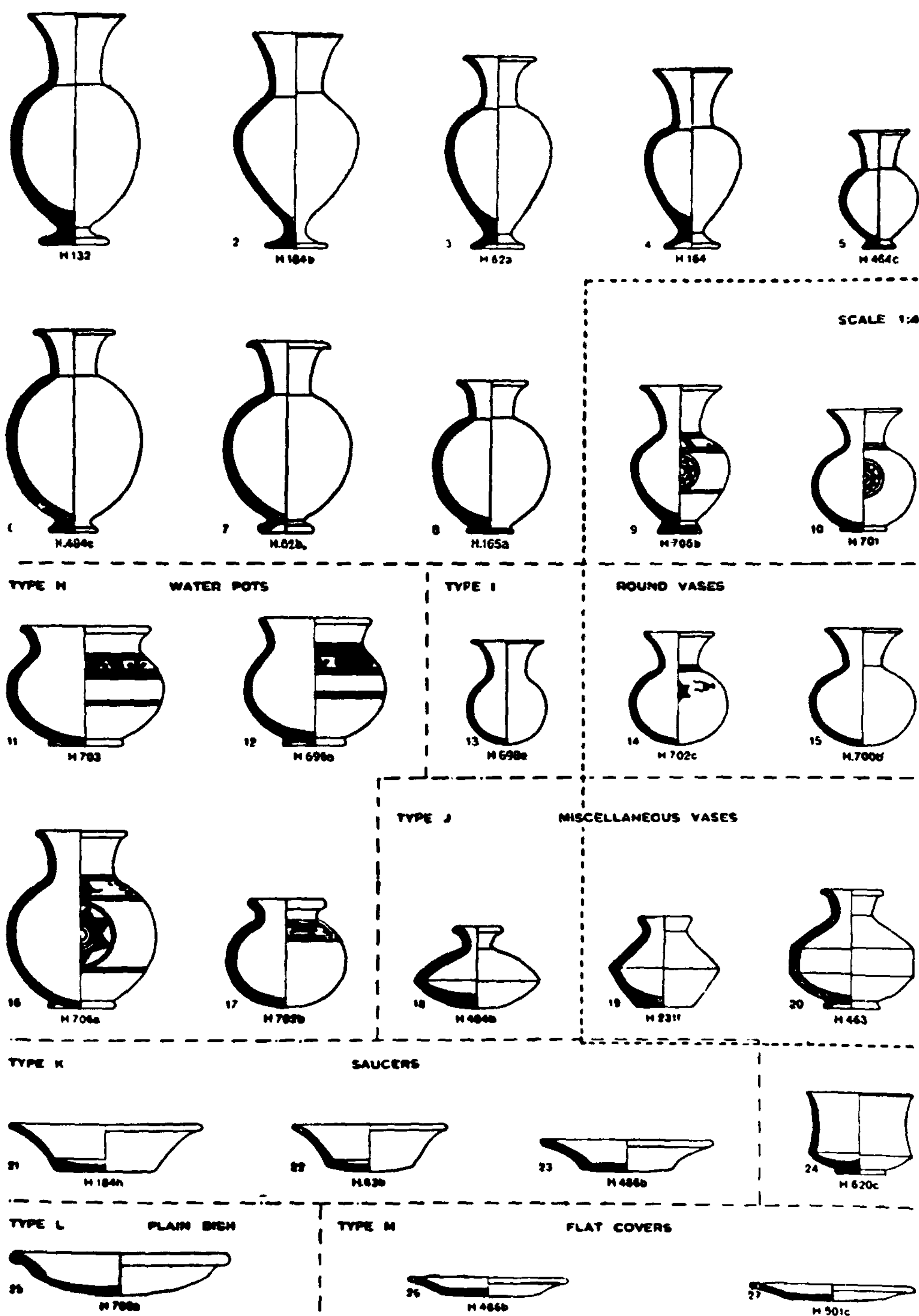


Fig. 1a Pottery Types from Cemetery H (After Vats)

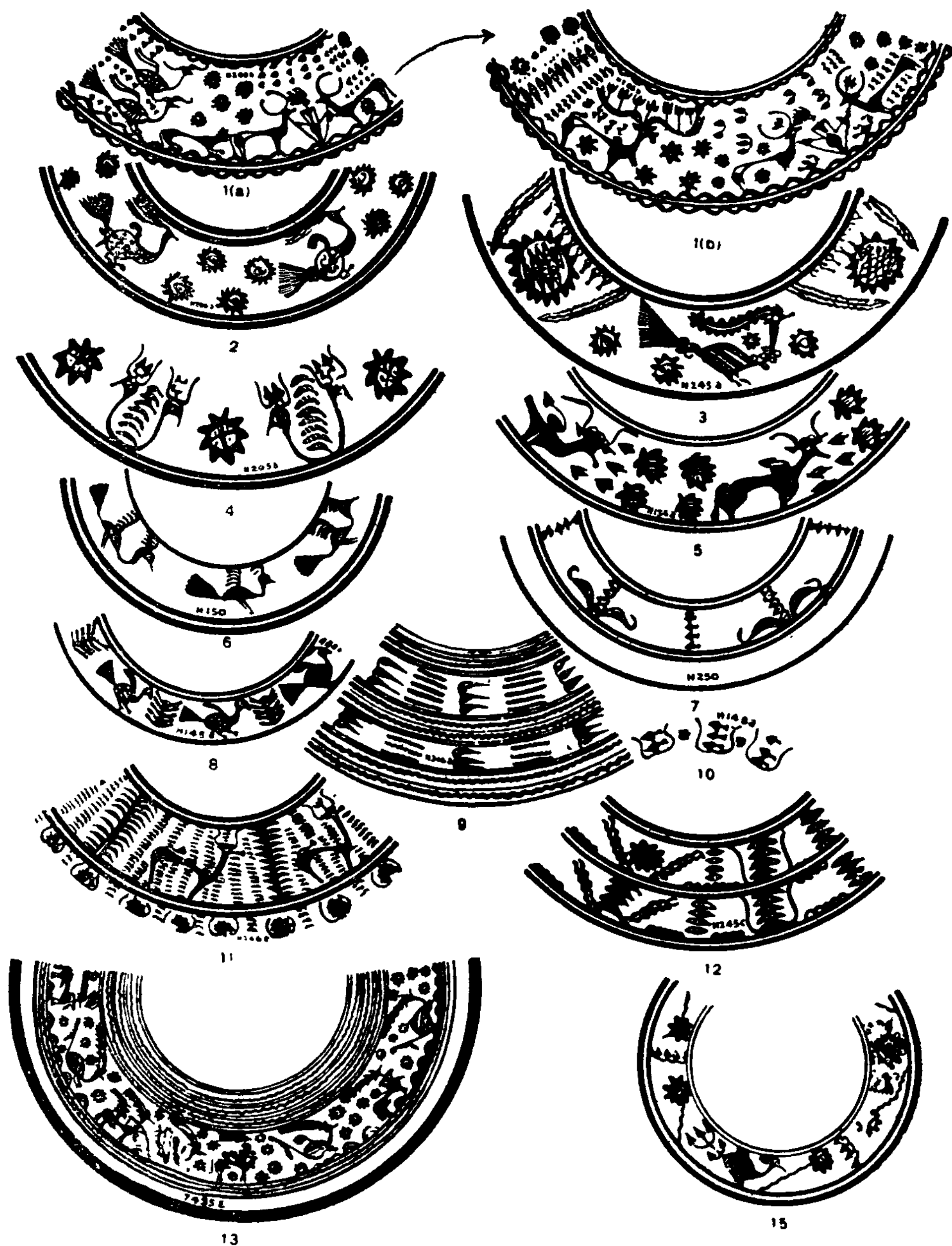


Fig. 2 Painted panels of mythological scenes depicted on burialjars from Cemetery H (after Vats). Top 1(a) and 1(b) have been referred to on p. 15

Vats has classified and illustrated the large collections into 13 groups (A to M), (Figs. 1) and each of these groups has smaller groups according to size and shape. Thus, no less than 27 forms of pottery are illustrated. These include:

1) Small and large ellipsoid jars, each having a flange, to receive a large deep, lid with or without a handle (A 1.8).

2) Bowls of three types (B 9-11).

3) Small - and medium-sized round jars with fingertip decoration on the lower part and sometimes covered with a small painted *lota* with a ring base (C 12-14).

4) Medium-sized carinated pots having a ringed base and a broad mouth, with a flange to receive a large and deep lid with a handle (D 15-16).

5) Water pots with a globular body, long flaring neck (E 18 and 20).

6) Dishes on squat stand (called food plates by Vats) (F 21-22).

7) Vessels with elongated body, at times egg shaped, with a flaring long neck, and ring-base. A few of these are painted with a concentric circle pattern on the belly (G 1-10).

8) *Ghatas* or vessels with a broad mouth, round body, and ring base, or simple and painting on the shoulder "water pots" of Vats (H 11-12 : 16-17).

9) *Lotas* or round vases, some painted (I 13-15).

10-12) This group represents three different types of vessels but have one thing in common and that is acute carination in the belly of the vessel.

13-15) Saucers or dishes with outgoing sides (K 21-23).

16) High sided bowl with carination at the base and ring below it (K-24).

17) Thick-sided dish with beaded rim (L 25).

18) Flat covers (M 26-27).

These 27 vessels would supply all the essential needs of any household with regard to storing of grain, water and other provisions, as well as eating and drinking.

However, certain forms are quite rare or unique, for instance, (Type F) squat food plates or dishes-on-stand and (Type G) vessels with elongated body and flaring neck and a ring base. In fact the ring base, dishes-on-stand and such other distinctive features are almost absent in Indian pottery from the early Historic period and later.[6] These characterize the prehistoric pottery of Western Asia as already noted by Vats, and occur in the Harappan and the chalcolithic pottery of western and central India. Thus, genetically the Cemetery H pottery is foreign-oriented. Even among its plain

dishes, saucers and flat covers, we miss the familiar Indian *thali*, (a flat dish with rounded corners and straight or inturned edge). These are even absent in the Harappan, but seem to appear for the first time at Navdatoli, and later in the Painted Grey Ware. Likewise, vessels with conoid and ring base, and large lids with a handhold figure in the Harappan but are rare or absent later. The same may be said about its dishes-on stand. All those from Harappans whether having a bowl or saucer-like upper part, have a long stem whereas those from the Cemetery H have a short stem with mouldings. Thus if any relation has to be inferred batween the Cemetery H people and their way of life, it will have to be with the later Indian people and their lifeways.

And for this comparison there is no better repertory of Harappan pottery than the Cemetery R-37 at Harrappa. Here one finds a bowl or dish-on-stand with mouldings (Fig. 24, 3), large lid with a prominent handhold (Fig. 23, XXXIX and Fig. 20), saucers and dishes (Fig. 19), and slender vases or flasks with elongated concavo-convex sides, and a small base, but not as narrow in the Cemetery H (Fig. 18, XXVIII and XXXIII d). However, these seem to be the direct ancestors of the Cemetery H flasks.

In short, in the present state of our knowledge, the Cemetery H people culturally and racially do not seem to be far different from the Harappans.

It is impossible that the makers of this beautiful painted pottery should be confined to the area around Harappa. At least the whole of the Punjab, northern Rajasthan and probably Sind should have been the home of the Cemetery H people.

Some of the points here raised for the first time were anticipated by Bridget and Raymond Allchin,[7] but not taken to their logical conclusion. They seem to agree with Vats that the Cemetery H culture was the final stage of the Harappan and continuous with it ; but that it must indicate the presence of foreign conquerors or immigrants. This might indicate a sort of cultural fusion which may be represented by the 'Cemetery H' culture itself. They further thought that the pottery showed some affinities with wares from Tepe Giyan (Strata II-III) and Djamshidi II and Susa D, all dated to *circa* 1500 B.C.

NOTES

1 R.E.M. Wheeler, 'Harappa 1946 : The Defences and Cemetery R 37', *Ancient India*, no. 3 (Jan. 1947), p. 118,

2 Gordon thinks that sherds similar to those of Cemetery H occur at Bara and Rupar. (See, D.H. Gordon, *The Prehistoric Background of Indian Culture*, (Bombay,

1958), p. 25 This appears to be correct as far as the design motifs such as the arrow-head, 8-rayed star and fish are concerned. But the fabric of these should be examined.

3 Wheeler, *op. cit.*, pp. 118-19.

4 Madho Sarup Vats, *Excavations at Harappa* (Delhi, 1943), Vol. I, p, 234.

5 *Ibid.*, p. 238.

6 Gordon, *op. cit.*, p. 84.

7 Wheeler, *op. cit.*, figs. 11-24.

8 Bridget and Raymond Allchin, *The Birth of Indian Civilization*, Penguin Books (Harmondsworth, 1968), p. 149.

Note : Figs. 18,19,23 and 24 mentioned in the text refer to Wheeler, *op. cit.*

GULF OF OMAN : ORIGINAL HOME OF THE INDIAN MEGALITHS A REAPPRAISAL.

K. S. Ramachandran

At the end of his article 'Gulf of Omna: the Original Home of Indian Megaliths'[1] S.P.Gupta has entreated me to put forth my views concering the dispersal of Indian megaliths. As a prelude I would like to stress that I am not in disagreement with Gupta insofar as the megaliths in India are an intrusion from the West.

Gupta observes that in the regions around the Persian Gulf and the Gulf of Oman, 'besides cairn burials, several types of sepulchral monuments, *the plans and construction of which are reftected in the Indian peninsular megaliths... ....* (italics mine). Thus south-eastern Arabia with its outlet in the Gulf of Oman, may be taken as the epicentre of the Baluchi cairns/as also peninsular Indian megaliths.' At the commencementof of the para he has declared that, 'it is difficult to believe that the Baulchi cairns or the Central Asian cists or cairns or barrows gave rise to the south Indian megalithic complex.. ......' but 'it is felt that the Baluchi cairns are generically related to the south Arabian cairns of Iron Age. He futher observes that 'several traditions from various regions coalesced in the islands of the Gulf of Oman and 'through the natural outlet of the Gulf of Oman, the people seem to have moved eastward following the traditional sea route along the Makran coast' In their diffusion too, 'the megalith builders followed the same route repeatedly, over a long period of time... .. ' He further states that the cairn builders of Baluchistan came into contact with West Asia and Central Asia and borrowed certain 'material items and spiritual ideas. Besides, 'a hybridization of the original ideas with those locally prevalent ones, leading to the new modified forms of the sepulchral monuments, as also the mode of the disposal of the dead' took place. On the other hand he asserts that there is no 'sufficient evidence as yet to connect the Baluchi cairns with either the Vindhyan or the peninsular (Indian) cairns generically.' The foregoing[2] is in short the basis for Gupta's hypothesis.

On the face of it, certain statements of Gupta are inconsist nt If fusion of several traidtions had taken place in the Gulf of Oman then it implies that Oman itself was on the receiving end. How then we reconcile to its being the 'Original Home'?

In putting forth my view I shall not provide any fresh data but examine those of Gupta. I shall consider them in the same order.

Before examining them I would like to point out that the megaliths in India fall into distinct zonal groups, viz., the tribal megaliths of Middle India and Assam, the peninsualar megaliths, and those of Rajasthan and Uttar Pradesh.[3] I have elsewhere delineated the characteristics of these groups and also shown how the third group stands compared with the peninsular monuments.

1- CAIRNS, CAIRN CIRCLES AND CAIRNS WITH MENHIRS

The characteristics of the cairns of the Arabian peninsula[4] can be summed up as follows:

a. Most of the cairns are 'piles of heaped up' stones;

b. Some of the circular heaps have a central menhir and;

c. some large and small heaps are surrounded by a circle of large boulders, sometimes the smaller ones are 'looped' to larger ones.

The first is a built up monument of rubble/ stone dry masonry. These, standing to a certain height, are circular, square and rectangular on plan. The hollow space in the centre is filled up with stones. Some of these also have big slabs covering the grave. Over these slabs are found rubble filling. These circular and rectangular structures recall similar monuments form Dambah Koh, Darbani ban, etc., in Makran.[5] Indian parallels are Carlleyle's[6] 'round topped' and 'flat topped' cairns of Rajasthan, These are essentially found in the Hadhramaut and in the contiguous area of Dhufar Qarra in Oman.

Carins with central menhir are also found in Uttar Pradesh and Madhya Pradesh. The Indian examples are surrounded by a bounding circle.

The third variety indicates the prevalence of large and small heaps of stones bounded by a circle of boulders where the smaller one simply touch or are jointed to the larger one. At any rate there is no suggestion of concetric chain of circle boulders.

These types of monuments are to be found in the south-west Arabia, particularly in the former Aden Protectorate and Yemen.

2. ROCK-CUT CAVES

The rock-cut caves excavated by Caton Thompson[7] are also to be found in the Hadhramaut in the Aden Protectorate. Beyond this, either in Oman or in the islands of the Gulf of Oman these have not been noticed.

Rock-cut caves, single, double, or multiple chambered, with shaft entrance, ledges/ steps in the entrance, central pillar, top opening, etc., similar to those from Kerala have been reported extensively from Meggido, Gezer, Jericho, Tell Ajjul, Tell Fara, etc., in Palestine and the Mediterranean islands. The affinities between the two regions - Kerala and the West - and the possible impact of Palestinian examples on the Indian rock - cut caves have been clearly established.[8]

Since, in India, these rock-cut caves are confined to Kerala and are not found in the Gulf of Oman people carrying this type of burial monuments could not have travelled along the coast of Arabia, Makran and to West coast of India to touch down in Kerala to finally settle down there. *Only a high sea voyage could have made it possible.*

3. SERIES OF OPEN RINGS OF UPRIGHT SLABS *vs* HOODSTONES

Gupta contends that a 'Series of open rings of upright slabs' found in Jebel Sot region recalls the hoodstones of Kerala. Only the multiple hoodstones of Kerala are circumscribed by a ring of converging stones. They form a 'big circle of sectorally dressed clinostatic (inclined-in this converging but not meeting) stones' enclosing multiple hoodstones or *kadaikallus* at ground level.[9] Inside the Arabian specimens there is not even a slightest indication of the presence of a single grave or even capstone. Hence these are, not similer to the Kerala hoodstones.

4. SARCOPHAGUS INTERMENT

Sarcophagus interment which is prevalent in Palestine is absent in the Arabian coast. However, it is reported in Bahrain.[10]

Exploration so far in India has reveald that this mode of burial is primarily to be found in southern India, particularly in Tamilnadu with a high degree of concentration in the District Chingleput. This is absent in the west coast and in the hinterland till we reach southern India. To me it appears that the Bahrain specimen is an outlier of a different route - perhaps overland - of dispersal. So far as southern India is concerned, mainly on the strength of negative evidence I am inclined to postulate a dispersal over the high seas.

5. TRILITHS OR TOPIKALS

According to Gupta the 'triliths' have inspired the topikals of Kerala. Triliths are tall leaning stones standing on end. These do not meet. Sometimes a flat stone is poised over them.[11]

The topikals[12] of Kerala indicate a highly advanced technology. The four clinostats are 'sectorally dressed' and meet at the apex to carry a domical/ hemispherical capstone; the whole resembling a mushroom. These are also confined to Kerala and are not found anywhere in any form as a variant along the coast (or hinterland) of Makran till we touch Kerala.

Even if we accept for a moment that the topikals were inspired by the Arabian triliths their absence elsewhere in India and the Makran and west coast would warrant a high sea route.

CISTS AND JAR BURIALS

The cist[13] referred to by Gupta is actually a pit cut into the bed-rock and covred by stone slabs. The burial is complete inhumation in a flexed position. The age, however, is indeterminable.

The jar burial[14] contained bones of modern animals and paper and cannot, therefore, be compared with the megalithic urn-burials of south India.

7. STONE CIST IN SAUDI ARABIA

The monuments are 'long cists lined with gypsum plaster'.[15] The description is too meagre to formulate any hypotheis. Neither are they illusatrated.

8. CAIRNS WITH PORT-HOLED SLABS IN OMAN PENINSULA

The cairns of Abu Dhabi and Qatar and the tumuli of Bahrain are a class by themselves.[16] The cairns comprise of an outer ring of dressed ashlar masonry structure enclosing a complexity of ossuaries entombing complete inhumations. The cists in this region particularly those of Iron Age consist of a grave chamber of 'plaster frame' closed by capstones. In the third type the walls of the chamber are coursed stones of dry masonry. They are built almost on the surface over which the tumuli rises.

The cairns at Hili[17] and Umm an-nar[18] are of the ashlar masonry type Here the passage through the outer ring was closed by stone blocks. Some of the stone blocks covering the passage had rectangular holes; some were provided with handles even. At Hili several dislodged stones had circular holes. The presence of several graves inside the cairns indicate a long period of usage which must have necessitated the reopening of the passage by removing the block. It is, therefore, clear that the function of the holes is similar to that of handles. Hence these holes cannot be on a par with the port-holes obtaining in south Indian cists.

In conclusion, Gupta himself has shown the disparities between the Arabian megaliths and the Indian counterparts. Yet he asserts that the similarities are only of a 'genralized kind: use of big stones, shapes of the receptacles of skeletal remains, presence of portals, ground-plan of the monuments, black-and-red ware, etc.' Use of big stones is a common feature all ove the world. With regard to shapes of receptacles I have shown that the sarcophagus does not show a continuous distribution throughout tht Arabian peninsula; the jar burial being modern has to be discarded. The ground plan of the monuments and their constructional details do not tally with any of the peninsular monuments. Going through the several references and the illustrations contained in them cited by Gupta in support of his theory I am not able to find any trait element connecting them with the peninsular megaliths. Therefore, I am convinced, in the absence of any fresh evidence, that the south Indian megaliths seem to have been inspired by a people capable of traversing rough seas and not by those who stuck to coastal sailings.

NOTES

1. S.P.Gupta, 'Gulf of Oman: the Original Home of Indian Megaliths' '*Puratattva*. 4, 1970-71, pp. 4-16.

2. *Ibid* , p.5.

3- K. S. Ramachandran, 'Megalithic zones in Indian' '*Professor K. A. Nilakantha Sastry 80th Birthday felicitaion Volume*, Madras, 19ol, pp. 244-54.

4. Richard Le Bowen Jr.. and Frank P. Albright, *Archaeological Discoveries in South Arabia*, Baltimore, 1959, pp. 133-36.

5. Major Mockler, 'On Ruins in Makran' *Journal of the Royal Asiatic Society*, London, 1877, pp. 121-34 and Sir Aurel Stein *Archaeological Reconnaissance in north-west Indian and south-eastern Iran*, London, 1937, pp. 73 ff.

6. A. C. L. Carlleyle, 'A Tour in Eastern Rajputana in 1871-72 and 1872-73; *Report of the Archaeological Survey of India*, VI, 1878, pp 13-15, 33-89 and 38-89.

7 G. Caton Thompson, *The Tombs and Moon Temples of Hureidha (Hadhramaut)*, Oxford, 1944, pp. 65-93.

8. K. S. Ramachandran, 'Megalithic Rock-cut Caves and their Parallels outside India', *Seminar Papers on the Problems of Megaliths in India*, Varanasi, 1969, pp. 58-65.

9. V D. Krishanswami, 'Megalithic Type of south India, '*Ancient India no.* 5, New Delhi, 1949, p. 40 and Plate XVIIA.

10. P. V. Glob, 'A Neo-Babylonian Burial from Bahrain's Prehistoric Capital' *Kuml.*, 1956, pp. 172-74 and fig. 4.

11. Bowen, and Albright *op. cit.*

12. V. D. Krishnaswami, *op. cit.* plate XVIIIA

13. P. V. Glob, 'Prehistoric Discoveries in Qatar', *Kuml* 1957. pp. 175-78 and figs. 5 and 6.

14. Geoffrey Bibby, 'Arabian Gulf Archaeology', *Kuml*, 1964, p. 104.

15. Geoffrey Bibby, 'Arabian Gulf Archaeology', *Kuml* 1265 p. 150.

16. Bibby, J. G., 'Five among Bahrain's Hundred Thousand Grave Mounds', *Kuml* 1954, pp. 134-41; *Kuml*, 1966, p. 93 and P. V. Glob, *Kuml* 1958, p. 165.

17. Geoffrey Bibby, *op.cit.* 1965.

18. Kund Thorvildsen, 'Burial Cairns on Umm an-nar', *Kuml*, 1962, pp. 208-19.



REPLY

I take this opportunity of replying a few of the objections Shri Ramachandran has raised against my hypothesis:

(i) That my statements regarding the relationship of Indian cairn-burials with the cairn-burials of Arabia and Central Asia has contradictions. I think Ramachandran has somewhere missed my basic stand on 'cairn-burial'. I have clearly stated that this is a very simple type af sepulchral monument and it may be seen existing with the burial practices of so many different cultures. Thus, I have differentiated three different contexts for them in India: one, when they are found in Baluchistan; second, when they are found the Vindhyas; and third, when they are found in south India. What I have said is that while the Baluchi cairns can be associated with the Arabian and Central Asian cairns the Vindhyan and south Indian cairns cannot be associated. This I have said on grounds of material items (pottery, iron and bronze object) as also the actual mode of the disposal of dead (cremation vs. exposure). I clearly pointed out that I beg to differ with N. R. Banerjee on this issue since he was the first to theorize on the 'original home of the south Indian megaliths' on the basis of clubbing together the cairns of the three regions in a chain fashion. I also maintain that megalithism came to India in more than one wave but following the same route along the Makran coast, and everytime a new hybridization took place at whichever place it touched the settled habitation. The non-cairn megaliths of south India owe their origin to a different wave.

(ii) That how can Gulf of Oman be the 'original home' of south Indian megaliths when rock-cut caves, a Kerala type 'megalith', are not at all found in the Gulf area - they are so far found in Palestine and Hadramout alone. According to him this favours his 'high sea' theory. Here I would like to argue in a bit unorthodox manner. It is well known that India is exporting to several Developing countries industrial products, such as machine goods, cars, scooters and iron objects for long. Their technical know-how, management, direction, etc., have been in foreign hands till recently; in certain cases we were only assembling them. Now, for the receiving country India alone was the original home of the cars or scooters and not the particular foreign country which made them for us. Similarly, what I have said is this: Gulf of

Oman is not a place but a generalized area on she Persian Gulf and all those who came to India through sea from Palestine, Arabia, Bahrain, etc , came first to the Gulf and then followed the coastal route - its geographical position on the map of this part of the world is such that it became a melting pot for so many traditions in 1000 B. C. since traders and voyagers from different countries of the region met here. I visualize that from Palestine the rock-cut cave tradition came to Aden Protectorate and from there it came to the Gulf (first) rather than crossed the high sea since it is more natural and easier a way than the high sea. From Hadramout to the Gulf there is an easy access overland or along the coast of southern Arabia, and I will not be surprised if some day we get a rock-cut cave nearer the Gulf (of course, prophecy in archaeology is dangerous). Then, there has not been forthcoming any appreciable positive archaeological proof for regular high - sea voyage in this part of the world before the 2nd century B.C., a date even Ramachandran feels is too late for Indian megaliths. In B, Cs it is more logical to surmise that the voyages here were coastal; the Harappan trade was maintained only in this manner.

(iii) In the case of cists, etc., he has raised the objection regarding the details in plan, touching of the clinostats, and the function of portals. As far as the plan is concerned, I have repeatedly said that it is of a generalized kind, and we shauld hardly expect more than this. After all, what appears to have come to us is 'idea', a 'generalized plan' and not a manufactured cist or 'trilith' or even a 'rock-cut cave' (go into the details of the rock-cut caves of Palestine, Aden protectorate and India and you can collect more then a dozen differences between them). About the function of the portal in a slabbed cist, the less said the better. Gordon Childe, Wheeler, and others have shown that what is important in the world context is their presence as a practice and not functional identity or formal uniformity. Is it not a fact that these portals served different functions in Europe and India, and who can say what was the function of small portals in the Pondichery cists or the cists lowered in Kerala pits?

(iv) In the case of terracotta sarcophagus, he has forgotten the references he himself has quoted in his most comprehensive *Bibliography on Indian Megaliths* (Madras, 1971; Department of State Archaeology). They have been found in the rock-cut caves of Kerala at Feroke, south Malabar, and Chevayur near Calicut; in the latter example it had eight legs. I do not insist on 'urn burial' as it is there in our Chalcolithic culture.

I would like to reiterate what I have said in my earlier paper: this is just a hypothesis based on a few distant resemblances and may be discarded the day we have more positive evidence in favour of some other alternative. Unfortunately, to me Ramachandran has as yet not been able to produce any positive evidence in favour of his 'high sea' theory. Negative evidence can prick a theory but it would hardly establish another. Will he now come out with a full paper in favour of his theory ?

S. P. Gupta

CONCEPT OF URBAN REVOLUTION AND THE INDIAN CONTEXT

Dilip K. Chakrabarti

I

The concept of the Urban Revolution was formulated by Childe in 1936[1] and in 1950[2] he put forward a clear delineation of the archaeological traits accompanying the first urban growth. Both the concept and the suggested traits the crucial determinant of which was the art of writing have come in for criticism in recent years, though not in all cases has the criticism been just or valid. At one point an urban status was assigned to the pre-pottery. A stage of Jericho primarily on the strength of its monumental architecture[3] and more recently,[4] the magnificence of his finds at Catal Huyuk impelled Mallaart to write that it would be invidious to deny an urban status to this chalcolithic Anatolian settlement only because it lacked writing. The controversy, in fact, seems to have died down ; Mellaart himself calls Catal Huyuk a neolithic town,[5] not a city. In the classificatory system of Archaeology, it is the art of writing which, if anything, should distinguish a civilized urban group from its barbarian contemporaries or ancestors.

Doubts have also been expressed about the significance of some other traits mentioned by Childe. Adams,[6] for instance, questions the significance of the reappearance of naturalistic art. He is also critical of Childe's attempt to identify the Urban Revolution on the basis of some 'loosely associated features', which, he thinks, Childe's traits basically are. Considered as a whole, this criticism is not quite a logical one. To understand the significance of a socio-cultural phenomenon an archaeologist has to depend willy-nilly on a number of apparently loosely associated but tangible traits. In any case, nothing more orderly or satisfying than Childe's ten traits has yet been offered for the delineation[7] of the Urban Revolution. The eight traits suggested by Braidwood in this context do not differ significantly from those of Childe.

On a different level, objection has been raised to Childe's use of the word 'revolution.' Mumford writes that though "the term does justice to the active and critically important role of the city it does not accurately indicate the process, for a revolution implies a turning things upside down, and a progressive movement away from outworn institutions that have been left behind ...... The rise of the city, so far wiping out earlier elements in the culture actually brought them together and increased their efficacy and scope."[8] Frankfort[9] objects to the word because it connotes a purposeful,

violent change which the facts do not suggest. Redfield[10] accepts the word but 'with hesitation'. Daniel[11] prefers to use 'synoecism', a Greek word meaning 'coming together'. Child himself admits that the urban growth-process is so finely divided in the archaeological sequence that it is difficult to locate the precise point at which the Revolution took place, the quantity passed over into quality. In the context of Eygpt Wilson has gone to the extent of saying, "one may accept a truth in Childe's 'Urban Revolution', provided it is understood that it was not 'urban. and was not a 'revolution." All these comments notwithstanding, this controversy may be considered purely academic. Childe's use of the term 'Urban Revolution' may be justified on a very simple ground. He coined the terms 'Neolithic Revolution' and 'Urban Revolution' on the analogy of the "Industrial Revolution" in England. There was not merely a marked technological expansion in England then but also a notable increase in population, the two features which are equally applicable to the period of the 'Neolithic Revolution' and 'Urban Revolution'.

The third and final point of criticism is concerned with Childe,s theoretical scheme to account for the first urban phenomenon and thus raises a basic issue. According to Childe it was technology which was the prime gathering force behind Urban Revolution. In *What Happened in History* he is explicit: "The thousand years or so immediately preceding 3000 B.C. were perhaps more fruitful in inventions and discoveries than any period of human story prior to the sixteenth century A.D. Its achievements made possible that economic re-organization of society that I term the "Urban Revolution."[14] Among these inventions the copper-bronze metalurgy. "the first approximation to international science",[15] as Childe calls it, was, of course, the most important. Added to it were the inventions of wheels and wheeled transport, sailboats, ploughs, etc. The period was also characterised by an expanded foreign trade, a logical outcome of the development of metallurgy demanding diverse ores from diverse regions and the beginning of the exact and predictive sciences like astronomy obviously bound up with extensive plough-agriculture which called for a knowledge of seasonal variations. In brief, the comparative self-sufficiency of the earlier peasant communities broke down and the way became clear for a new settlement pattern and a new arrangement of society to rise.

As far as one is aware, the first reaction to this conceptual scheme set in from the Chicago school of archaeologists whose view-point was concisely summed up by Braidwood as early as 1950. "We do not believe there was a second change in kind in the technologico-economic realm as civilization and the pre-civilizational phases of food-production were differences in degree. This emphasis on cultural growth and process as civilization appeared makes our interpretation different from that of Gordon

Childe ... The great change between pre-civilization and civilized human life came in those realms of culture other than the technological and economic."[16] In a number of publications Adams also has expressed a similar opinion. To prove his point Adams has argued that metallurgy came to be effectively developed only in Early Dynastic Mesopotamia when cities were already a normal feature of the Mesopotamian social life.[17] He also poses the problem of Egypt "where the decisive of Early Pharaonic power was accompanied by little more in the way of technological change than an enhancement of the supply of raw materials."[18] He goes on to say, "the later techno-logical superiority, in other words,may have had little to do with the processes which brought the city into being."[19] Agricultural surplus was necessary but without a new series of institutions like that of state and kingship this surplus could not have been effectively mobilised and given expression into urban settlements and all that went with them.

II

A point which is relevant to the present paper is that this theoretical controversy regarding the first urban growth has never been specifically examined in the light of Indian data. The basic element of the controversy is Braidwood-Adams view-point. The other discussions, as cited earlier, are merely academic.

What is known about the background of the first Indian urban phenomenon or the Harappan civilization is still relatively little and may be summarised in the following abstract historical terms. The Harappan urbanism did not develop in a cultural vacuum but had an antecedent rural history behind it. On the available evidence this rural history goes back about one thousand years (or more) in the uplands of Baluchistan. By about the first half of the third millenium B.C. a village base came to be securely established in all the major regions in which the Harappan civilization came subsequently to flourish, and if the discovery of Saraikhola and allied sites is any indication, in the North-West Frontier tract also. The way in which the original growth in the Indo-Iranian-Afghanistan borderlands expanded to include the alluvial zones of the Harappan distributian area, the phases through which this process of expansion was accomplished and the changes that the original Indo-Iranian-Afghanistan borderland stimuli might have undergone in the process are all subjects of careful, detailed studies. But in an impressionistic view, the pre-Harappan villagers may be said to have introduced in the Harappan distribution belt the following technologico-economic features : an extensive range of painted wheelmade pottery and thus an extensive use of wheels, a limited but a developed knowledge of copper-bronze, a plough-based cultivation along with a knowledge of locally-cultivable crops, the use of durable building-materials, the laying out of a nucleated settlement within walls, the turning out of a wide variety of

terracotta and stone objects, a good deal of regional interconnection, an undetermined quantum of external trade contacts, etc.

But what is significant from the point of view of the subsequent urban growth is that this technological and economic stage did not lead by itself to the Harappan civilization. Almost all its significant items—copper-bronze metallurgy, wide trade-contacts, grid-patterned cities, monumental architecture, an elegant craftsmanship in stone and the art of writing—are quite distinctive both in scale and quality from everything that was achieved earlier. Whether or not the Harappan growth could be achieved without a Mesopotamian (or perhaps even an Elamite) stimulus will perhaps be always a debated point but the crucial deduction in the present context is that the technologico-economic base of the Harappan civilization was concomitant with the civilization itself; it did not antedate the civilization. *It seems that the process of change was basically in the social-institutional sphere, giving the earlier village horizon a new, qualitatively different dimension.*

This impression persists also in the case of India's second urban growth, roughly dated in its beginning around 600 B.C. Whatever the reason or reasons of its end, the Harappan civilization did not leave behind any urban legacy. In fact, for about a thousand years or more, India was essentially a land of non-literate village-farming communities. The basic feature of the history of this period is the spread of effective agriculture in almost all the major agricultural areas of the subcontinent, particularly in those areas which were once outside the Harappan system. One may visualise the history of this agricultural spread in two stages. During the first phase which possibly lasts up to about 1000 B.C. a neolithic-chalcolithic base came to be established and as the excavated house-types, agricultural crops, etc., suggest, these neolithic-chalcolithic villagers in different parts of India worked out with their respective eco-systems a relationship which persists till today. Incidentally, this period is one of the most significant ones in Indian history because this seems to be the period in which much of the base of modern village India was laid. From about 1000 B.C. onward this village base came to be intensified through the use of iron. Around 600 B.C. there is the archaeological evidence of fortified urban settlements like Rajagriha, Varanasi, Kausambi and Ujjayini.[20]

The problem in the present context is: was the ~~techno-~~economic base created between 1750 B.C. and 600 B.C. the immediate causative factor of India's early historic urban growth? The evidence suggests that in this situation also the immediate causative factor was in the social-institutional sphere.

Only three points need be noted about the earliest historic fortified urban settlements of Rajagriha, Varanasi, Kausambi and Ujjayini. Each of them had a local

agricultural base. Each of them lay on a well-defined early historic trade-route from the middle Gangetic Valley to the Deccan. And, they were also the centres of the first well-documented historical political powers of Magadha, Kasi, Kosala and Avanti. In fact, a local agricultural base, an organized trading activity and a centralised political power-structure went into the making of each of them as a city. Of these three factors, the primary emphasis should perhaps be given on the factor of political power. On a theoretical level the primacy of political power in the making of a city has been adequately emphasised by Sjoberg. "It is the primacy of political power in providing the social stability necessary for the maturation of commerce and manufacturing that is responsible for our de-emphasis of the role of purely economic or commercial factors in the rise (and diffusion and decline) of cities. These forces are significant on their own account; yet they can operate only under the aegis of a broader societal power structure."[21]

None of the foregoing facts should come as a surprise to the students of Indian history and archaeology but taken collectively they seem to fall in line with the opinion that the Urban Revolution was "pre-eminently a social process."[22]

NOTES

1 Childe, V. G., *Man Makes Himself* (London, 1941). Originally published in 1936.

2 Childe, V. G. "The Urban Revolution," *Town Planning Review*, Vol. 21 (1950) pp. 3-17.

3 Kenyon, K. "Jericho and its Setting in Near Eastern History," *Antiquity* Vol. 30 (1956) ,pp. 184-195; also, Reply to Professor Braidwood, *Antiquity* Vol. 31 (1957) pp. 82-84; Wheeler, R.E.M., "The First Towns," *Antiquity* Vol. 30 (1956), pp. 132-136; Braidwood, R. J., "Jericho and its Setting in Near Eastern History", *Antiquity*, Vol. 31 (1957), pp. 73-81 ; Childe, V.G., "Civilization, Cities and Towns," *Antiquity*, Vol. 31 (1957), pp. 36-37.

4 Mellaart, J. "Catal Huyuk, A Neolithic City in Anatolia," *Proceedings of the British Academy* Vol. 51 (1965), p. 201.

5 Mellaart, J., *Catal Huyuk : a Neolithic Town in Anatolia* (London, 1967).

6 Adams, R.M., *The Evolution of Urban Society. Early Mesopatamia and Pre-Hispanic Mexico* (Rochester, 1965), p. 11.

7 Braidwood, R. J., *The Near East and the Foundations for Civilization* (Oregon, 1950), p. 41.

8 Mumford, L , *The City in History* (London, 1961), p. 31.

9 Frankfort, H., *The Birth of Civilization in the Near East* (London, 1951), p. 38, Footnote 3.

10 Redfield, R., *The Primitive World and its Transformations* (Ithaca, 1965), p.X

11 Daniel, G., *The First Civilizations, the Archaeology of their Origins* (London, 1968), p. 26.

12 Childe, V. G., *The Prehistory of European Society* (Harmondsworth, 1958), p. 89.

13 Wilson, J. A., *The Culture of Ancient Egypt* (Chicago, 1963), p. 34.

14 Childe, V. G., *What Happened in History* (Harmondsworth, 1952), p. 69.

15 *Ibid.*, p. 78.

16 Braidwood, R. J., *loc. cit.*, p. 42.

17 Adams, R. M., "Factors Influencing the Rise of Civilization in the Alluvium: Illustrated by Mesopotamia," *City Invincible* (ed. Kraeling C. H. and Adams R. M.), Chicago, 1960, pp. 31-32.

18 *Ibid.*

19 *Ibid.*

20 The history of this period (1750-600 B.C.) from this particular point of view has been discussed in details in Chakrabarti, Dilip K., *Early Urban Centres in India, an Archaeological perspective, C. 2500 B.C.—C. 300 A.D.* (unpublished monograph, Calcutta, 1972).

21 Sjoberg, G., "The Rise and Fall of Cities: a theoretical perspective," *International Journal of Comparative Sociology*, Vol. 4 (1963), p. 111.

22 Adams, R. M., "The Origin of Cities," *Scientific American*, Vol. 203 (1960), p. 153.



COMMENTS

The paper deals with the still emerging and apparently unsettled concept of urbanization as enunciated from time to time by different archaeologists and historians. There cannot be any gainsaying that the earliest settlements were some kind of villages, and it came with the formation of settled habits. In the natural process of events villages grew up into towns. It could not, however, be true of all villages, for growth of population, division of labour, division of the society into professional groups, and accumulation came only to those communities which were blessed in one way or another by the bounties of nature such as a fertile hinterland, a source of water for irrigation, a rich source of a particular raw material, facilities for trade by virtue of location on a trade route or on the river bank or on the coast, and the industry and imagination of the populace.

In the context of the development of urbanization in India, the rudiments of the later cities of the Harappa Culture can be traced in the village communities of the hill villages of Baluchistan, in Pakistan. Despite the smallness of their size there are diverse industries in them and some kind of communal living as well.

The Harappan cities seem to be a mature event, built no doubt on the subs-tratum of the villages of the earlier days. These are characterized by communal activity of an apparently centralized nature, and it was possible to sustain them in affl-uence or glory because of the obvious backing of economic wealth indicated by the archaeological and monumental remains. It has, however, not yet been established if there was a centralized power at one or more centres of the Harappa culture nor even if the uniform culture traced over an extensive area and over an extensive period of time was sustained on the point of sword by a central agency. It cannot, therefore, be said for certain if it was the political power that was responsible for the propagation of the urban culture in the Indo-Pakistan sub-continent.

It must, therefore, be conceded that urbanization, from the Indian experience, depended primarily upon socio-economic factors. Political power may have given the cities some shape or policies of expansion, whether it followed from a monarch, an elected prince in a psuedo-hereditary system, a warrior or from a chosen leader of men in a republic.

—N. R. Banerjee

The second urbanization in India was a culmination of several socio-economic factors operating over many preceding centuries. The extensive use of iron facilitated the clearance of jungle on a large scale and the intensification of agriculture resulted in the accumulation of surplus wealth which was accompanied by a development of trade, industry and handicrafts. These developments were accelerated by technological advances in the fields of metallurgy, manufacture and marketing of goods and transport and were reflected by an intensification of division of labour and stratification of society and a growth of complex institutions, like the guilds of bankers, merchants, sailors, artisans, sculptors, iron-smiths, bronze-smiths and weavers. Within the age-old broad division of the society into four *varnas* were now evolved numerous castes and sub-castes on the basis of a variety of functions, trades, callings and occupations. But more important than these was the emergence of the leisured class among the affluent sections of the upper classes who could indulge in fine arts including painting, drama and poetry and lead a life of luxury and give patronage to various craftsmen and artists like the dancer, the musician, the jester and courtesan.

A well-organized political administration was necessary for the maintenance of security as much of the village as of the city and a strong agricultural base like a stable political power was indeed essential for the sustenance of the village as well as the city. But what distinguished a city from a village was a concourse of people of various professions and callings like merchants and traders, artists and craftsmen, poets and astrologers, acrobats and jesters, and pimps and courtesans, who all eked their living, being interdependent and bound together by common interests and a complex set of socio-economic relationships. While the majority of the city dwellers of the various classes toiled and earned their bread, those belonging to the richer classes enjoyed the major share of the surplus wealth as well as the leisurpe, roduced by the technological advances and the resultant development of trade, commerce and industries.

—*Krishna Deva*

The above paper deals with (I) the concept of the Urban Revolution, and (2) its applicability to the Indus and early historical urbanism. It is a highly commendable paper, and my independent studies, particularly relating to the early historical urbanism, have led to conclusions not basically different from those of Chakrabarti.

In the first place, I would hesitate to use the word 'urbanization' in the Indian context. In both the periods, the Indus and the early historical, there was no large-scale drift to the city, as the word would lead us to expect. The vast population continued to be rural, and nothing altered the predominantly rural character of the land. The glamour of Mohenjodaro and Harappa of the earlier period and of Taxila, Kausambi, etc., of the later one should not lead us to forget or ignore the essential fact that India has all along been a rural country.

Childe's urban Revolution has been criticized by others on more than one score. But, as Chakrabarti rightly points out, there is no better categorization of urban traits than the 'abstract criteria' laid down by Childe in 1950: Whether all of them were causes of the Revolution or some were results thereof is another matter. But there is some justification for the criticism of the term 'Revolution', in that with the coming into being of cities the old order did not violently change. From this point of view, Urban Emergence would be a less offensive term.

Chakrabarti has very rightly held that the technological and economic stage reached by the prehistoric chalcolithic cultures did not lead by itself to the Indus civilization, its techno-economic base is concomitant with the civilization itself. Much has been said about the possible antecedents of the civilization, but with little

success. The latest remarks of Wheeler are significant. 'But whether they (*scil.* the ill-soiled industries and cultures of the Baluch hills) will ever throw a very revealing light upon the origins of great valley civilization is increasingly doubtful. None of them show any clear primary organic relationship with the Indus Valley culture, which remains obstinately a creation of its own lowland environment' (*The Indus Civilization*, third edition, Cambridge, 1968, p. 9). It is also certain, as stated by Chakrabarti, that the civilization did not leave any urban legacy.

The factors that gave rise to early historical cities are less nebulous than in the earlier case, thanks, largely to literature ; in the absence of large-scale horizontal excavations, our knowledge of the Painted Grey Ware and Northern Black Polished Ware Cultures is not extensive. But an exclusive reliance on literature will tend to a wrong emphasis on the political factor to the exclusion of economic factors in the establishment of these cities : that is due to the nature of literature available to us. We must not lose sight of the fact that for a firm political power-structure a solid economic base is essential. How far iron technology was a contributory factor it is difficult to guess. But an extensive use of iron artefacts is not attested in the early NBPW levels of any site. In a slow moving society effect of iron is likely to have been slow.

—*A. Ghosh*

Dilip K. Chakrabarti's paper is divided into two parts : In the first part he deals with the concept of the urban revolution, as propounded by Childe, Braidwood, Glyn Daniel, Henri Frankfurt, Adams and Redfield, and in the second, the circumstances resulting in the growth of urbanization in India. As regards the controversy over the concept of urban status, Chakrabarti himself confesses that it is largely academic which underlines the fact that there could not be a uniform set of diagnostic traits to discriminate urbanized societies from pre- or non-urbanized (folk or peasantry) societies. The constructs of rural-urban dichotomy and rural-urban continuum have equally been criticized. The relationship between urbanization on the one hand and economic development on the other has evoked a great deal of discussion. But to determine the typology of urban form, we have to take cognizance of the changing place occupied by modes of economic integration in society as a whole. Paul Wheatley feels that there could be five conceptually distinct, though in practice partially overlapping, approaches to the investigation of urban forms : (i) reliance on ideal-type constructs; (ii) formation of ecological theories; (iii) delineation of trait complexes ; (iv) conceptualization of the city as a centre of dominance; and (v) an operational approach usually based on the size of the urban settlement. Viewed against these approaches Childe's ten indices to

signify the advent of urban forms should be considered delineatory rather than explanatory. As such he was unable to establish functional relationship between them, and it is this aspect which has to be emphasized in our approach to the problem. Not all of the theoretical criteria for determining the urban forms occur in all early cities. The various conceptualizations of urbanism may or may not be true but there is no denying the fact that the atributes of each have varied in form and function from culture to culture. This brings me to the other part of the paper. I shall, however, confine my comments only to the Harappan Urbanism which, according to Chakrabarti, did not develop in a cultural vacuum but had an antecedental rural history behind it.

Admittedly, the phenomenon of urbanism has to be considered within the broad spectrum of closely interrelated economic and institutional social processes. Linked to the emergence of Harappan cities are increased levels of specialization in labour, innovation like writing, and the form of monumental architecture. The geographical aspect of the process of urbanization has already been emphasised for the developmental process in southern Mesopotamia. How far is that frame-work applicable to conditions in the Indus plain requires to be worked out in proper detail. Regions are seldom if ever uniform in their resources. Thus the imbalance of regional components can serve either as a stimulus or a deterrant to urban growth. Unfortunately, excavations have been virtually confined to major town- and city- sites with the result that we know very little about the living arrangements and the economy of the masses. Non-artifactual material particularly relating to subsistence ecanomy is sadly deficient. While one would like to agree with Chakrabarti's analysis about the technologico-economic features which the pre-Harappan communities passed on to the Harappans, his affirmation that 'the technologico-economic base of the Harappa Civilization was concomitant with the civilization itself needs careful consideration, for it involves the definition of the term civilization. Does urbanization lead to civilization everywhere is a question which may not be easy to anwer at this stage. We all know that behind the agreement in some of the cultural traits of the Harappan and pre-Harappan communities there lies a basic difference in the scale of ceramics and in the scale of urbanisation. The pre-Harappan cultures of Sind, Baluchistan, Gomal Valley and Rajasthan did display a meaningful pattern of somewhat uniform development level of material culture but the role of the idea and stimulus diffusion from Mesopotamia, Iran Seistan, combined with the *genius loci* cannot be ignored. The most notable trait of the Indus Civilization is the presence of writing and monumental architecture. It is well-known that at each of the excavated sites where Harappan occupation has been found to be overlying that of the pre-Harappan, the settlement of the Harappan period

has been found to have started with a mature expression. The form of the civilization thus does not seem to have been locally developed on the sites involved viz. Kalibangan Harappa, Kot Diji, etc. Recent excavations at Tepe Yahya, Bampur, Shahr-i-Sokhta, Saraikhola, and Gumla have already indicated a pattern of communication between Sind, Baluchistan, Seistan and Mesopotamia. Diffusion, as we all know, is accompanied, by some kind of selection and modification and I must emphasize that the model of transformation of the peasant group to the urban one in a unilinear progression cannot be applied unreservedly. The problem, however, still remains : where did the *form* of the Indus civilization develop? What is more urgent to the solution of the problem is to study the traits of the loosely-termed pre-Harappan communities in the various regions, and to establish points of interrelationship and lines of communication between each, for it is at this stage of developmental process of urbanization that we have to recognize the identifiable stimulii coming from Mesopotamia, Iran, etc. It is plausible to assume that settlements of comparatively larger size, and ecologically potential would attract new stimulii more favourably. Which is this type of a pre-Harappan settlement? Can we name Mohenjodaro, with its unplumbed waterlogged strata, as one such site? So far it has been customary to emphasize the contacts between these regions during the mature phase of the Indus Civilization. But now our objective is different. The detailed analysis of the evidence here would involve disproportionate discussion and is not being attempted. It will suffice to indicate that the native development of village-town complex, as represented by these cultures, seems to have been spurred on by the diffusion of idea of civilization.

—B. K. Thapar

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I would like to confine my observations in the present context, to the concluding part of Chakrabarti's paper wherein he has attributed the growth of urbanization in the Ganga Yamuna doab to the primacy of the political power. He feels that organized trading activity was possible only under a centralized powerful political or administrative system. He, however, overlooks the factors which led to the emergence of one or more expanding political powers. Could this not be primarily an outcome of the techno-economic development preceding the rise of powerful states in the doab and a desire (or need) to control the trade-routes by means of political expansion or peaceful political relations? It is to be remembered in this connexion that around the fifth century B.C., Indian economy was money[1] (gold/silver) based (at least in upper India). as indicated by the existence of a system of coinage. The era of prosperity which followed a greater use of iron technology probably resulted in the growing demand for comforts and luxuries. It was, therefore, felt necessary to have a universally acceptable storable capital which could be used by the traders and others as and when they desired, irrespective of political barriers, for which it was essential to replace the barter system by monetary exchange. With the acceptance of monetary exchange, which had international standard in the civilized (unisolated) world of those days, trading activity grew faster ; consequently certain places of relatively easy access turned into trading centres or cities with the concentration of craftsmen and traders.

India in the past (as also now) had a rural base with comparatively a few cities but its economy was money-based at least from the beginning of historical times. The barter-based exchange was essentially local in ancient days whereas the one with a monetary base could operate in a wider area on an inter-territorial basis. It is the existence of a monetary exchange that should be taken to be the determinant trait for urbanization or any urban settlement, since within a cultural or political zone the value of money (gold/silver) was determined by the rates of exchange agreed upon by trader of one or two centres. The whole economy would therefore be concentric in nature within a cultural zone or state. But on an extra-territorial plane the rates of exchange (value of money) would be determined in an intersecting manner in accordance with the rates of gold/silver acceptable to various groups of traders from different countries.

The Harappans, though not familiar with coinage, knew precious metals like gold and silver and perhaps used them as a medium of exchange. It is not unlikely that this monetary standard on an extra-territorial plane had links with west Asia and Egypt. In the same way the monetary exchange related to the historical urbanization was linked with Persia and Greece.

I feel that the deciding factor in calling a particular culture as urbanized should be the existence of a monetary exchange rather than any other feature, may that be script or monumental architecture.

—*M. C. Joshi*

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[1] It would not be out of context to quote the traditional definition of money (in economic terms) :

'Money is a matter with functions four. A measure, a medium, a standard, a store.

GENESIS OF HARAPPA CULTURE

D. P. Agrawal

The Harappa culture seems to appear on the scene with an enigmatic abruptness, and is thought to have succeeded the so-called pre-Harappan cultures. The monumentality of its city architecture and the regimented and standardised (and also commercialised) cultural traits aggravate its uniqueness, and hence the problems of its genesis. In recent years, Dales (1965), Wheeler (1968), Fairservis (1967), Ghosh (1965) and the author (1971), have put up theories to explain the Harappan origins. Fairservis has given a very comprehensive and a stimulating discussion of this subject (1967). The evidence is re-evaluated here in a new perspective and an unorthodox hypothesis is suggested to explain the data.

As most of the excavations were confined to the Harappan cities, which were planned first and then laid out and therefore have an in-built abruptness, the problems of the Harappan genesis looked quite formidable. The recent evidence of Kalibangan excavations and a large number of C^{14} dates that are available help us to understand this genesis in a proper perspective now. If we take into account the total matrix of the pre-Harappan cultures on which the Harappa culture was implanted, and take a dynamic view of the cultural processes, the problem of the Harappan origins becomes easier to understand.

C^{14} DATES*

A large number of C^{14} dates and their evaluation (Agrawal and Kusumgar; in press) are available now from the so-called pre-Harappan and Harappan sites (Table 1; Fig. 1). The curious thing to note is that the C^{14} dates of these so-called pre-Harappan and the Harappan sites (Fig. 2) show a clear temporal overlap (Fig. 1). A set of seven C^{14} dates places the upper levels of the mature Harappa culture at Mohenjodaro to c. 2000 B.C. The Kot Diji late Pd I is dated to 2100 ± 140 B.C. (P-195); Damb Sadaat II has three concordant dates placing it c. 2200 B.C. (L-180 C, L-180 E and P-523). It is obvious that Mohenjodaro's early levels, when dated, should go at least 3-4 centuries back in time. We thus see a distinct co-existence of the so called pre-Harappan and the Harappa culture in terms of C^{14} dates. At Kalibangan, a peripheral hence later site, the C^{14} dates for the periods I and II (the pre-Harappan and Harappan) again show a distinct overlap between the two cultures. The Kalibangan Pd II had a spread of c. 2200-1700 B.C., and the Pd I may be assigned minimum date bra-

*All C^{14} dates are based on the half-life value of 5730 years and are uncorrected for C^{14}/C^{12} variations.

cket of c. 2300-2000 B.C. (Table 1) (Agrawal and Kusumgar, in press). The dates from Niai Buthi (P-478) and Nindovari (TF-862), both Kulli sites, again are c. 2000 B.C. (within one standard deviation). Bara, in E. Punjab, shows Kalibangan Pd I influence in several incised motifs and pot shapes but is dated c. 1800 B.C. (TF-1204 and 1205).

KALIBANGAN

In view of the general assumption that the Harappa culture was a successor of the pre-Harappan cultures (e.g. Kot Dijian), this enigmatic temporal overlap between the two can now be explained by the archaeological evidence recently unearthed at Kalibangan (Lal and Thapar, 1967). Ghosh, reporting on Kalibangan says, "It is of great import to note that this pottery (of Pd I) occurs in KLB-2 (mound-2) from the very bottom to about the mid-height of the mound *alogside of the Harappan* (emphasis D.P.A.)". He further points out, "They (the Harappans) not only co-lived with the local population (the pre-Harappans) but possibly in the same houses, for two sets of pottery are found mixed-up". Reporting on his earlier explorations Ghosh further says, "It (pre-Harappan pottery) is found mixed-up with the Harappan pottery on the surface of practically all the Sarasvati-Drishadhvati sites." (Ghosh, 1965).

There is only one explanation of these data: the Harappa culture and the so-called pre-Harappan (e.g., Kot Dijian) cultures were, in fact, contemporary. How do we reconcile this unorthodox conclusion with the genesis of the Harappa culture? It has a simple answer: the Harappa culture was an urban, artificially standardised, selectively "Indianised" form, which derived from, yet continued to be co-eval with the so-called pre-Harappan cultures. The two cultures co-existed as the present day planned city of Chandigarh exists in the matrix of a rural Punjab. The pre-Harappan and the Harappa cultures are not two disparate entities but urban and rural aspects of the same cultural phenomenon. The Harappa culture did not supplant the pre-Harappan cultures except where cities were built, but had a bilateral relationship with them

Let us now analyse the composition of the Harappa culture to see if it was really different and genetically unrelated to the so-called pre-Harappan cultures.

COMPOSITION OF THE HARAPPA CULTURE

Once we penetrate the facade of Harappan uniqueness, we find several strains in its make-up. The traits derived from the pre-Harappan levels at Kalibangan for example, are, "fish scale, *pipal* leaf and external cord-impressions, in decorative themes including the arrow, and dish-on-stand, ring-stand, and lids in pottery forms, besides terracotta bulls and toy cart-wheels, shell and terracotta bangles, steatite disk beads,

quern-stones, also the knowledge of metallurgy, concept of a fortified settlement and the English bond in the masonry" (Lal and Thapar, 1967). The "intersecting circles", which is a characteristic Harappan motif, can be traced to the Kulli pottery at Nindovari, and even to the polychrome Nal Ware. At Amri, three periods were recognised, the last was Harappa, Pd II being Intermediate. But even in Amri Pd ID, free style depiction of animals, bull, and over-all scale pattern make their appearance (Wheeler, 1968).

THE ORIGINS

Though the Harappan cities are abrupt in appearance, the process of urbanisation in the area was not so. Several recent studies (Dales, 1965; Fairservis, 1967) have shown that the Indus basin and its adjoining regions were on the threshold of urbanisation in the middle of the third millennium B. C. Larger villages were growing into towns: a 'Palace' and a rampart were built in Mundigak Pd IV; Kot Diji Pd I, and Kalibangan Pd I settlements were fortified. This process of incipient urbanisation can be discerned in Phases D and E of Dales (1965) and Stages III and IV of Fairservis (1967).

To speculate, the increase in the agricultural produce of the villages forced the need of markets, and hence a merchant class. Recurrent floods required the building of trading centres at elevated grounds—a regular feature of the Harappan citadel. This merchant class not only planned the Harappan cities, but also deliberately standardised the cultural traits of these city centres. The regimentation and commercial uniformity of the Harappan industries stands starkly against the diversity and delicacy of the regional idioms of the pre-Harappan cultures. This Harappan abruptness was deliberate, and not a process of natural growth. The apparently eclectical assortment of traits that comprise the Harappa culture has a conscious bias to a local chauvinism (the incipient 'Indianisation' of Fairservis), for example, the depiction of the local flora and fauna on the pottery, like the Brahma bull, cobras, *pipal* leaf, birds and fish.

The pre-Harappan cultures, on the other hand, betray a natural growth. They show their regional idioms, as also the Iranian affinities, as has been emphasised by several authors. The process of the Iranian influences can be traced to the so-called chalcolithic cultures, e.g., Malwa and Jorwe cultures. Sankalia has traced a large body of traits and motifs common between the Indian chalcolithic and West Asiatic cultures, as also between the chalcolithic and the pre-Harappan cultures (Sankalia, 1968; 1969). All these facts betray a gradual cultural diffusion from West Asia into India.

But the Harappa culture stands apart from this cultural stream, though a number of pre-Harappan elements go into its make-up. So, while the village cultures (the

so-called pre-Harappan) continued to absorb foreign influences and develop the diversity of their regional idioms, the Harappa culture was extremely selective and regimented in its choice, which imparted it a uniqueness. And if it was deliberate, the time involved in the genesis of the Harappa culture must have been very small. Yet, we should be able to trace the 'experimental stages' somewhere—even though a very short time was involved.

The requisite evidence comes from the cultures of northern Sind and the Kachhi plains, which Fairservis has, in fact, called an Early Harappan stage. One can trace the mature Harappan elements of unpainted terracotta bangles, female, and animal figurines, terracotta 'cakes', and overall patterns with floral dominance in pottery motifs in these cultures.

Even the monumentality of the Harappan architecture is not unique. We noted the ramparts of Mundigak and Kot Diji earlier; at Damb Sadaat a platform with drains was situated at the top of the site; large structures like those of Edith Shahar complex are known from Kolwa, Drakalo, Ornach, as well as Zhob and Loralai.

It is significant to note that though the secular items, like pottery and the size of bricks, were standardised, the religious practices could not be tempered with. This is reflected in the ritualistic remains recovered, for example, from Mohenjodaro and Kalibangan. The mother goddess figurines of Mohenjodaro (Sind) give way to the so-called fire-altars with phallic (?) objects at Kalibangan (Rajasthan).

In southern Sind, however, the large pre-Harappan villages maintained their individuality for quite sometime, despite the appearance of the Harappan culture. This alone explains the Harappan pottery at the Kulli sites and in Amri Pd ID, and the pre-Harappan ceramics in the early Mohenjodaro levels. At Kalibangan, the co-existence of the two is unmistakably documented. Finally, the nearby pre-Harappans did succumb to the urban fashions, perhaps like the present day satellite villages of the cities. The Harappan phases at Kot Diji, Amri and Kalibangan should not be understood as one culture supplanting another, but like a city corporation taking over a suburban village to urbanise it.

It should, however, be emphasised that the presence of the pre-Harappan elements in the composition of the Harappa culture does not underestimate—much less deny—the large number of innovations that were part of the Harappan urbanisation.

CONCLUSION

The Harappa culture, though essentially derived from the pre-Harappan cultures, continued to be co-eval with the latter. The cities as trading centres had vital

economic relationship with the numerous villages which produced the agricultural surplus. The Harappa culture and the so-called pre-Harappan cultures* (obviously a misnomer in the context) are in fact urban and folk (rural) facies respectively of the same cultural phenomenon.

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*We therefore propose to term the so-called pre-Harappan cultures as the "Indus Cultures" instead.

INDUS CULTURES | HARAPPA CULTURE

AMRI: TF-863 IC; TF-864 IB

DAMB SADAAT: UW-60 III; P-523 II; L-180E II; L-180C II; P-522 II; L-180B I; UW-59 I

KOT DIJI: P-195 Late I; P-180 Mid I; P-179 Mid I; P-196 Early I

NIAI-BUTHI: P-478 Kulli

NINDO-VARI: TF-862 Kulli

KALIBANGAN Pd I: TF-154, TF-156, TF-165 (Late); TF-161 (Mid); TF-240, TF-162, TF-241, TF-157, TF-155 (Early)

GHALI-GHAI: R-378a

MOHENJODARO: TF-75, P-1182 A, P-1176, P-1178 A, P-1180, P-1179, P-1177 (Late)

KALIBANGAN Pd II: TF-143, TF-946, TF-149, TF-150, TF-605, P-481, TF-153, TF-25, TF-942 (Late); TF-152, TF-142, TF-141, TF-139, TF-151, TF-948, TF-147, TF-145, TF-608 (Mid); TF-947, TF-163, TF-607, TF-160 (Early)

LOTHAL: TF-19 V A; TF-23 V A; TF-29 IV A; TF-26 III B; TF-27 III B; TF-22 III B; TF-133 Late II; TF-136 Late I

ROJDI: TF-199 IB; TF-200 IB

1000 1500 2000 2500 3000

RADIOCARBON DATES IN YEARS B.C.
(HALF LIFE = 5730 Yrs.)

TABLE : C^{14} DATES OF PRE-HARAPPAN AND HARAPPAN SITES

Sites	C^{14} dates, based on half-life=5730 yrs., in years B.C.		Sites	C^{14} dates, based on half-life=5730 yrs., in years B.C.	
Amri (W. Pakistan)	TF-863,	2665±110	Nindovari Damb (W. Pakistan)	TF-862,	2065±110
	TF-864,	2900±115			
Damb Sadaat (W. Pakistan)	UW-60,	2200±165	Kalibangan Pd I (Rajasthan)	TF-154,	1820±115
	P-523,	2200±75		TF-156,	1900±110
	L-180E,	2200±360		TF-165,	1965±105
	L-180C,	2220±410		TF-161,	2095±105
	P-522,	2550±200		TF-240,	1765±115
	L-180B,	2320±360		TF-162,	2105±105
	UW-59,	2510±70		TF-241,	2255±95
Kot Diji (W. Pakistan)	P-195,	2100±140		TF-157,	2290±120
	P-180,	2250±140		TF-155,	2370±120
	P-179.	2330±155	Ghalighai (W. Pakistan)	R-378a,	1923±55
	P-196,	2600±145			
Niaibuthi (W. Pakistan)	P-478,	1900±65	Mohenjodaro (W. Pakistan)	TF-75,	1755±115
				P-1182A,	1365±65
				P-1176,	1965±60
				P-1178A,	1965±60
				P-1180.	1995±65
				P-1179,	2085±65
				P-1177,	2155±65

TABLE (Contd.)

Sites	C^{14} dates, based on half-life=5730 yrs., in years B.C.	
Kalibangan Pd II (Rajasthan)	TF-143,	1665±110
	TF-946,	1765±105
	TF-149,	1830±145
	TF-150,	1900±105
	TF-605,	1975±110
	P-481,	2050±75
	TF-153,	2075±110
	TF-25	2090±115
	TF-942,	2225±115
	TF-152,	1770±90
	TF-142,	1790±105
	TF-141,	1860±115
	TF-139,	1930±105
	TF-151,	1960±105
	TF-948,	1980±100
	TF-147,	2030±105
	TF-145,	2060±105
	TF-608,	2075±110
Kalibangan Pd II (Rajasthan) (*Contd.*)	TF-947,	1925±90
	TF-163,	2080±105
	TF-607,	2090±125
	TF-160,	2230±105
Lothal (Gujarat)	TF-19,	1800±140
	TF-23,	1865±110
	TF-29,	1895±115
	TF-26,	2000±125
	TF-27,	2000±115
	TF-22,	2010±115
	TF-133.	1895±115
	TF-136,	2080±185
Rojdi (Gujarat)	TF-199,	1745±105
	TF-200,	1970±115
Bara (Panjab)	TF-1204,	1845±155
	TF-1205,	1890±95
	TF-1207,	1645±90

Table : The C^{14} dates of the pre-Harappan and Harappan sites. The temporal overlap between the two is evident.

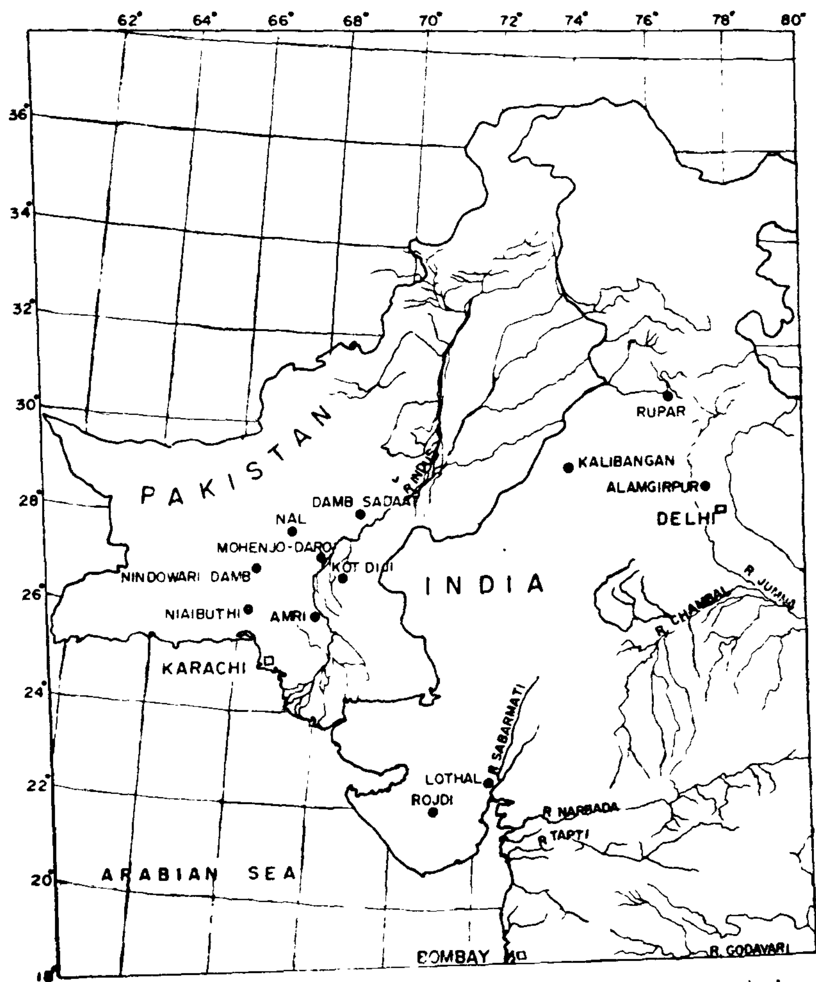


Figure showing Harappan and Indus Culture (i.e , pre-Harappan) sites

A MODEL FOR UNDERSTANDING THE FIRST URBANIZATION IN INDIA

S. P. Gupta

My problem is to understand the process of first urbanization in India, and I feel that a good 'evolutionary' model will answer my questions relating to this problem in a better way than any other model. In this connection I would hasten to say that the term 'evolution' does not stand for *universal* 'change plus continuity' in spite of the fact that Darwin used it precisely in this sense for biological evolution. Similarly, evolution includes growth and decay both ; the only criterion is the element of continuity, which, to my mind, is there in the context of rural India. I also feel that 'culture' is continuously changing ; it looks static only to those who are incapable of perceiving the subtle changes through the changing attributes of archaeological artefacts. My model takes care of both the concepts prevalent in archaeology, viz. evolution is change and continuity, and evolution includes not only progress but also decay. The simplified visual form of my model is a combination of two spirals – one moving anti-clock-wise from a small to bigger and bigger circles and the other moving clockwise from the bigger circle to smaller and smaller circles (Fig. 1). Since in a spiral the circles are parallel to each other, i.e., they are concentric, one circle roughly represents one 'horizontal plane' or 'level' or 'stage'. I would like to add that although the concepts of 'spiral', i.e., a continuously moving phenomenon, and 'level', i.e., a static plane, do not logically go hand-in-hand (Braidwood[1] was always conscious of this difficulty) we have to accept it as a purely heuristic device, since in archaeology the concepts of 'period' and 'phase', which have an indirect bearing on the 'stage' concept, have a long standing and can hardly be done away with. In any case, I do admit that it is purely a hypothetical plane on which different cultural entities reach a state of various rleationships which appear harmonized. For example, Kalibangan I may be conceived as a stage or level on which intensive agriculture, incipient metallurgy, boundary wall or fortification, modest production of luxury goods, all got harmonixed and balanced in a particular ecological set-up, and for a century or so the change in this pattern, to the extent of dtstributing this balance, did not occur.

Within my evolutionary model of the first urbanization in India, I clearly visualize six stages, if not more. (Fig. 3). I, however, do not believe that one stage 'caused' the other, I only point out that one stage 'determined' the other, i e., created favourable condition for the other, at least till Stage IV. Further, the change from one stage to the other was not occurring solely due to internal factors. Each of these stages was a complex process in which internal and external factors interplayed in an ecologica-al set-up that largely determined the form of the stage. As far as the directional changes

in particular cultures of a stage are concerned, at least in the first three stages, they were largely caused by external factors. In other words, contacts with west Asia proved to be an important factor in the creation and growth of the Harappan cities and City States.

Before I discuss my scheme, I would like to make my stand clear on a few issues, lest any confusion occurs about my views.

To me, the Harappa culture, *as a whole,* cannot be placed within 2350 – 1750 B.C. bracket. The Social Science approach to the problem of urbanization has to be brought in to decide the chronology. The C-14 dates available so far for his culture establish only the period of effective trade - contacts (howsoever limited and one sided it was) of the Harappans with the Irano-Mesopotamians, they do not admit 2350 B.C. as the initial date of the Harappa culture. No culture can *start* with an overseas trade of some consequence in luxuries, etc.; it has to be preceded by a stage in which the trade route was opened for a limited exchange. In fact, occasional and specific exchanges of goods must have taken place even before that. To some, these two stages, 'formative', i.e. in which trade routes were somewhat regularly frequented, and 'genesis', in which seeds of contact were sown, may look to be hypothetical but my model is based upon this very hypothesis. The evidence of Tepe Yahya, Amri and Kot Diji bears it out.

Similarly, I do not think that either a 'full grip over metal technology' or so-called 'surplus food production' (Malik[2] has nicely discussed the snags of this usage in archaeological writings) singly or collectively would lead to urbanization. In the Indian context the examples of the Copper Hoards and the Megalith builders at once come to my mind. Both of them had very good grip over metal technology (for Copper Hoards, see Agrawal[3]: 1971), and at least the megalith builders had that 'surplus food production', through tank irrigation and rice cultivation in fields ploughed with iron plough-shares (see Gupta[4] : 1972), but neither of them could develop urbanization, as is archaeologically known till this day.

I also feel, that culture - contact situation brought about by the contact of two cultures belonging to the same level would hardly lead to urbanization. Cultures, as said earlier, are continuously changing their level due both to internal and external factors ; sometimes due to the 'unknown genius' and favourable ecological conditions internal factors become dominant in the process of change and, sometimes due to trade contacts, invasions, migrations, etc., the external factors become dominant in bringing about the change. Obviously, I am thinking in terms of micro-levels of cultures as also macro-levels. Even micro-level differences between the achievements of the involved cultures are enough to create situations in which two cultures can interact in a process that may result in forming a level higher than both of them. The 'system' that

sometimes work in such a situation is the system which has been very broadly defined by Redfield in his model of 'Urban-Peasantry-Folk interaction' and which has been utilized by Malik (Fig. 2). But this system is based upon macro-level differences since there is a vast difference in the levels between the urban and peasantry, and may not be applicable in the Indian situation of the period under consideration.

The term 'urbanization' as understood in the context of prehistory has been defined variously, but population growth, complex settlement pattern, high technological skill, e.g., metallurgy, amount of luxury - goods consumed, birth of a political authority, writing, etc., have generally been taken (collectively) as diagnostic elements. Since the role of luxury - goods produced, exchanged and consumed has not been sufficiently recognized, I would like to say a few words about it. To me, it is the balance-wheel of all urbanization ; remove it, and the structure will collapse. In fact, the level of urbanization of a culture is the level it has reached in consuming and changing the luxuries. Luxuries, according to dictionary meaning, are items without which life can easily be lived. To me, therefore, the term includes not only gold, silver and ivory objects, etc., but also big houses, imposing fortifications, citadels, complex drainage system, arts and crafts, etc. India's first urbanization admits this fact.

I also believe that Kot Diji, Amri, and other pre-Harappan cultures immediately preceding the Harappa culture and also continuing with it loosely form an entity, separate from the Harappan, and that Harappan is not just a developmental stage in the evolutionary process of the first urbanization in India, as Mughal would like us to believe by useing the term 'Early Harappan' for the Kot Diji complex. On the same grounds, I do not favour the term 'Proto-Harappan'. Incidently, I would also like to give a caution in the use of the term 'Pre-Harappan' lest it is too late. At the moment, mainly due to the writings of Mughal,[5] who sees Kot Diji everywhere, from Amri (IA) to the Gomal Pass sites and from northern Baluchistan to Rajasthan and Punjab, in the time - bracket of 2700-2050 B.C., and Suraj Bhan[6] who sees the same (pre-Harappan Kalibangan is taken to be Kot Dijian) complex in Haryana in the time bracket of 2100 and 1400 B.C., we are faced with a few very serious problems. If the time bracket of the Kot Diji culture now ranges between 2700 and 1400 B.C. how far are we justified in using the term 'Pre-Harappan' for it. since in this recokening it continues to exist not only during the Harappan times but also long afterwards. Also, when the initial date of the Harrappa culture, which one could reasonably take to the 'Formative' if not the 'Genesis' stage, may also fall within the time - bracket of 2750 - 2350 B.C. (2350—1750 B.C. is the date of the 'mature stage' of the Harappa Culture). I know personal feelings do not and should not count in such matters but since I have taken the stand that neither the overseas trade could be associated with the beginning of the Harappa Culture (in fact, Mughal following Lamberg-Karlovsky[7] has quoted the examples of steatite vases, etc., exchanged between India and Mesopotamia through the southern Iranian route touching Tepe

Yahya in 2700 B.C.) nor the Harappa culture with its citadel, writing, etc., could start all of sudden in the Indus Valley at the known sites, I feel justified in assuming that the so far unknown place of genesis of the Harappa culture lies somewhere to the west of the Indus, but within the plains, or foothills of Baluchistan, and during the period which may not be far removed from the initial date of the Kot Diji culture. I now fear that Kot Diji culture has also started assuming dangerous dimensions with archaeologists, almost similar to that of the Harappa culture, one level concept for a culture existing for about 1700 years over a vast area ! It may be better if we redefine this culture and become more specific about its chronology and spatial distribution,spread and culture-contact situations, particularly in Rajasthan, Haryana etc., i.e., in India.

Similarly, while I do believe that each of the 'State Capitals' [8] of the Harappans was largely fed and supported with agricultural produce, human labour, raw material and a few industries by a large number of peasantry settlements of their own people *around* the town, I cannot help visualizing *some* of the so-called pre-Harappan (or Kot Dijian, if one likes to call them so) settlements in the same vicinity playing the same role in the Urban-Peasantry interaction of which Redfield-Malik model stands. But I am, for the moment, not at all categorical on this point for want of material proof.

My 'evolutionary' model which is based upon 'level' concept of cultural growth and 'urban-sub-urban interaction' system is placed below for consideration with this much of confession that the present model is *not* the final answer in model making for a proper understanding of the first urbanization (not 'the development and decline of the Harappa Culture'—that is only incidental) in India ; it has to be drastically changed. If material comes contrary to the 'set of hypotheses' placed here, it may even be completely rejected ; and it will be rejected by myself. However, for the present, I do feel that urbanization is a developing (socio-economic) process which gets accelerated in favourable ecological conditions due to the intrplay of various internal and external factors of men and material, including consumption and distribution (i.e , trade and commerce) of necessary as well as luxury-goods, and cultural contacts of two cultures operating on two different economic levels. Although this 'acceleration' has sometimes been called urban 'revolution', I have very little faith in this concept, particularly since Braidwood has shown in Iraqi Khurdistan that the similar concept of neolithic 'revolution' is now untenable and that there is a gradual change from 'incipient agriculture' level to 'incipient urbanization'. 'Acceleration' is not synonymous to 'revolution'. While acceleration only generates quickness in the pace of change, revolution topsy-turvys many existing institutions and often creates abrupt directional changes in the flow of culture. The known Harappan stage is of accleration and not revolution; it did not destroy the non-Harappan earlier and contemporary *traditions*, it made use of them. Of course, as yet we do not know where exactly to put the genesis of this culture; I have only indicated two generalized conceptualized stages, one stage *determining* and not causing the other.

Six Stages of the First Urbanization in India

			GENESIS		
Stage I	Phase E of Dales	2800–2500 B.C.	(a) Interaction between the higher Iranian cultures and the peasant cultures of north Baluchistan, through Afghanistan. Indirect effect (traits alone). (b) Sporadic exchanges of goods between Iranian, Baluchi and Sindhi settlements (Tepe Yahya, Amri, Kot Diji, etc. are involved in this process). (c) Search for the potentialities of the new ground in the foot-hills and the Indus plains.	Mundigak III 1 to 4; later half of Damb Sadaat I; Rana Ghundai II; Kot Diji I lower; Amri I (c) and (d).	Arrival of new peoples from the west who contributed to the extension of settled life on to the vast plains of the Indus system. Proliferation of settlements and development of copper as well as bronze metallurgy; wheel made pottery; plain seals; multiroomed houses; extension in the total occupied area of the villages; population growth; communal ossuaries; sporadic trade with west Asia; beginning of fortification. **Incipient urbanization; non-Harappan.**
			FORMATIVE		
Stage II		2500–2350 B.C.	Formation of a few distinctive cultures, by the amalgamation of cultural traits of a large number of different complexes, in the Indus plains; also trait borrowals from contemporary Baluchi sites.	Mundigak III 5, 6 and VIa; Damb Sadaat II; Rana Ghundai IIIa and IIIb; Anjira IV; Nal / Nundara; Amri IIa; Kot Diji I upper; unknown phase of Harappa culture on the Indus: Mohenjodaro I (?)	Permanent settlement, repeated structural activity at one and the same place; group character of houses; well laid fortifications with entrances; growth of population; in some cases house-building activity outside the fortification ('spill over') has been suspected, e.g., at Kot Diji; proliferation of villages; development of bronze technology; terracotta female figurine; square and circular flat stone seals with geometric symbols;

					some emphasis on the production of luxury-goods; elaboration of fortification (massive and with additional features of 'gates' and 'bastions'). Economically and socially developed centre. **Harappan cities are born.** *Hypothetically:* Appearance of 'twin mound' concept with a 'citadel' early form of Indus Script; establishment of regular trade-routes by establishing sea 'posts' on Sind and Makran coasts. Rise of a 'trading class' and a 'political authority'.
			EFFLORESCENCE		
Stage III	Metropolis Phase of Agrawal	2350–2150 B. C.	Development of two distinctive cultures of Kot Dijians and Harappans in close collaboration, but with an overall dominance of the Harappans. Formation of Harappan 'City States' of Mohenjodaro, Harappa, etc.	Kalibangan late I; 'Early Phase' of Harappa; and the early phase of the known levels of Mohenjodaro; Sutkgendor, etc.	Occupation of 'incipient urbanized settlements' which had changed to 'developed centres' (both Harappan and non-Harappan) as well as flowering of newly pre-planned cities in Sind and Punjab; sea-posts turned into 'sea-ports'; exploration of new sources of raw material; mass production of luxury items trade; (internal and external) with some briskness, standardization of script; several stages in the development of art and architecture (not worked out so far). **Cities alone develop under their political system.**

			AFFLUENCE		
Stage IV	Provincial Phase of Agrawal	2150–1800 B. C.	Expansion of the Harappa Culture in space, and the birth of new 'City States' of Lothal, Surkotada, Kalibangan, etc.	Kalibangan II, Lothal (middle phase), Rojdi, Surkotada (early phase), etc.	External trade continues but growth of 'middle man' among traders; consolidation of regional variations in the Harappan town-planning (roads and drains) architecture of the citadel, ware-house, etc. **Establishment of a few new cities**
			QUIESCENCE		
Stage V	Period II, V A of Lothal	1800–1700 B. C.	Break-up of the Harappan 'trade-system', external and internal both; natural calamities. Fall of the City States.	Most of the Harappan towns were adversely affected.	Overseas trade collapses; the hue-and-cry of urbanization declines due to several internal and external 'economic' causes (e.g., tribal upheaval in northern Iran) as well as the climatic changes; contact between individual towns declines. **Collapse of city-based economic pattern.**
			DISPERSAL		
Stage VI	OCP complex of Sutaluj Ganga plains	1700–1400 B. C.	Identification with local (peasant ?) cultures and the Copper Hoard complex. It is also called 'Late Harappan Phase'.	OCP sites of Punjab, Haryana and western U.P., Siswal-Mitathal culture of Haryana; Late Harappan cultures of Saurashtra, Punjab, etc.	Emergence of a new orientation in cultures; hybridization and growth of new culture-complexes. Urbanization, which was confined to a few capital towns, not more than a dozen of the City States, once again devolved into peasantry. Urbanization never permeated the overwhelming majority of villages, Harappan and non-Harappan both. **Main Stream village pattern) continues.**

NOTES

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8 The concept of 'empire' and 'provincial capitals' given earlier by B. B. Lal and S.R. Rao does not appeal because when I make the comparative study of town-planning, fortification, roads and lanes, drainage, terracotta and copper figurines, figurative painted designs, etc., of different cities, I see each town different from the other, in spite of the fact that there was an undercurrent of cultural uniformity evidenced in items like script. Further, since none of the Harappan cities has yielded any evidence of a 'temple' or a 'palace', the pattern of political leadership of these City States seems to be some sort of an oligarchy and not religio- political kingship of the type in ancient Irano- Mesopotamia.

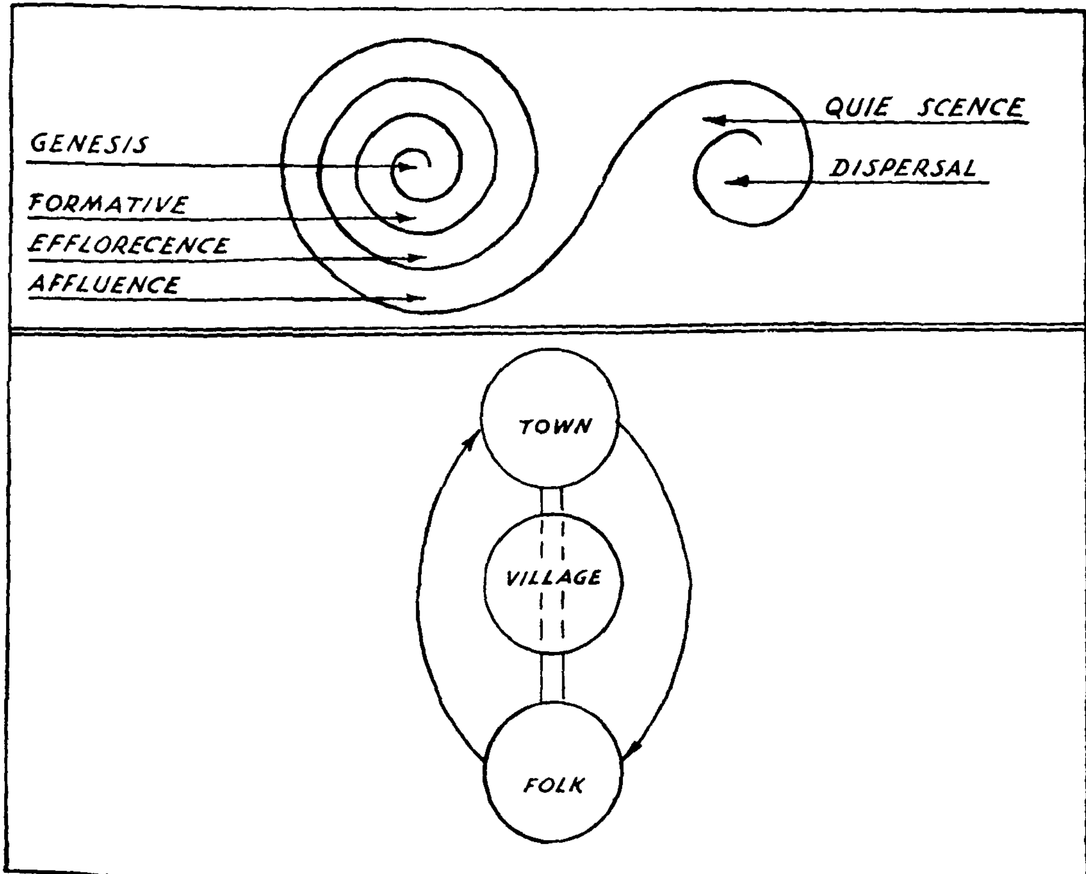


Fig. 1 and 2 showing models.

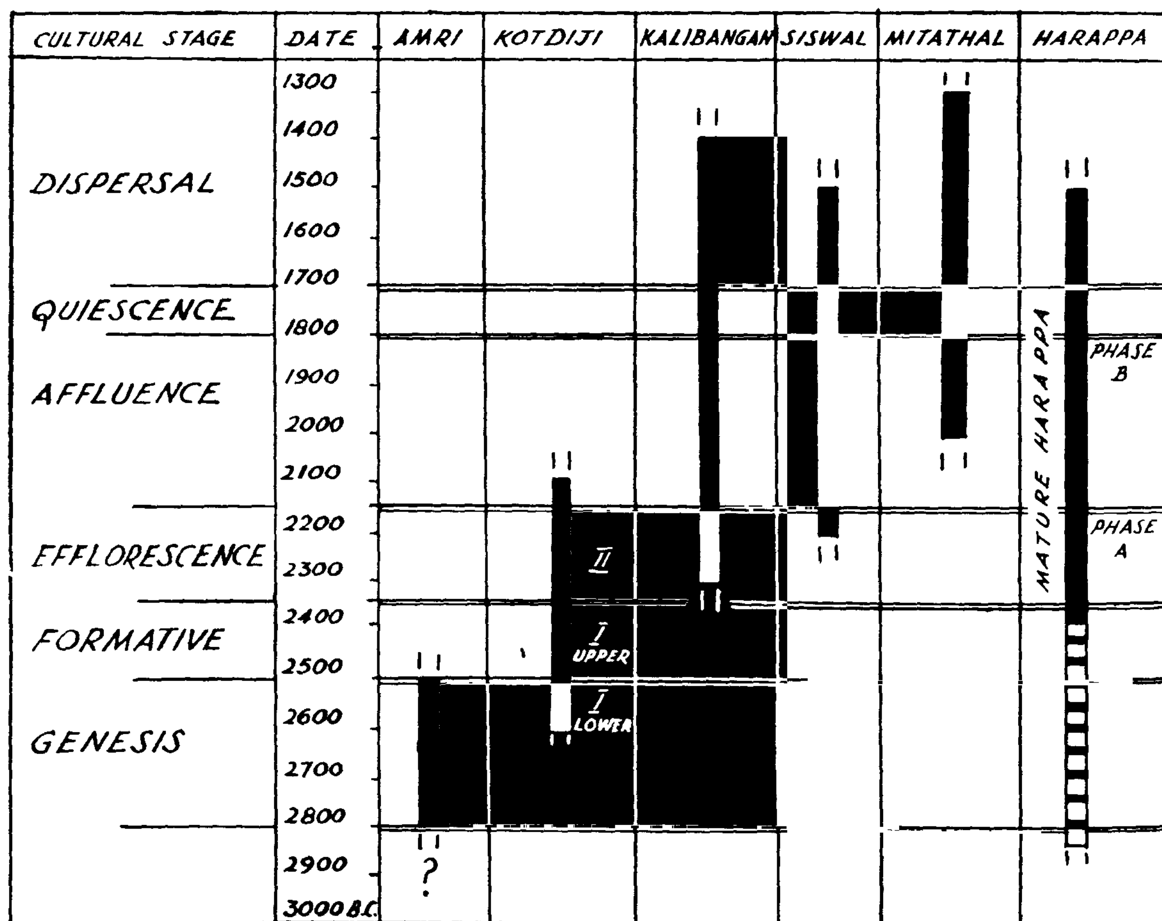


Fig. 3. Stages of first urbanization in India and relative chronology of pre-Harappan cultures in the context of mature Harappa culture.

NOTES & NEWS

A Note on the Recent Excavations at Piprahwa, Distt. Basti (U. P.)

Excavations recently conducted (January – March 1972) on the main stupa at Piprahwa[1] in district Basti, Uttar Pradesh, resulted in the discovery, at a lower level, of a mud stupa with brick-edged outline. Over this mud stupa was noticed a square base, embellished with rectangular niches at regular intervals. The centre of the mud stupa was further excavated with an intent to obtain a relic casket, if any. In the centre, at a depth of 6 meters, were encountered two brick-chambers, each measuring (82 × 80 × 37 cm.) and evidently these could have been the chambers for enshrining the relics. The bricks used in this construction, measured 40 × 27 × 7 cms. (Plate I)

At the bottom of one of these chambers was noticed a soap-stone casket, a red ware dish with another similar dish used as a lid for it. The maximum diametre of the casket is 7 cms., and the height is 12 cm., while the diametre of the dish is 26 cm. The casket contained chared bones.

The other brick chamber also yielded relic casket, with two dishes as seen above. In this case the soap-stone casket is bigger in size with the maximum diametre of 9 cms. and height of 16 cm.

It appears (as the excavations would reveal) that the stupa was built in three stages. Tthe earliest of these seems to be the mud stupa with brick-edged outline. The diametre of this stupa is approximately 30 metres. In all probability, the square basement with niches at regular intervals of 80 cm. was a later appendage. The niches which were meant for taking in icons or images measured 92 cm. — 52 cm. × 12 cm.

As the relic caskets were picked up from the deposits contemporaneous to the N.B.P. period[2], the relics can be dated to 5th - 4th cent. B.C., earlier in date to those Inscribed Relic caskets discovered at a higher level by Peppee in 1897-98. However, to prove or to disprove the hypothesis that this site is of ancient Kapilavastu, a few more intensive excavations are needed.

—K. M. Srivastava

NOTES

1. Lat. 27° 26° 30′ N; Long. 80° 7′ 50″E. Earlier in the years 1897-98 Excavations were conducted at Piprahwa by W.C. Peppee (vide 'The Piprahwa Stupa containing relics of Buddha, *Journal of the Royal Asiatic Society of Great Britain & Ireland p. 573-78*) and P. C. Mukerjee (*vide* – A report on the tours of Exploration of the Antiquities in the Terai, Nepal, (Calcutta, 1901, pp. 43-47). The present one is the continuation of the one started in 1971.

2. Fragment of the Northern Black Polished Ware has been picked up from the layers contemporary to the mud stupa.

Inscribed Harappan Potsherds from Chandigarh

In December 1969, the remains of a cemetery and a habitation site close by were accidentally brought to light in Sector 17, Chandigarh, while the foundation were being dug for a multi-storeyed structure and a garage-*cum*-cycle-stand. Subsequently, in January 1970 small-scale excavations were undertaken by the Archaeological Survey of India in collaboration with the Directorate of Archaeology and Museums, Punjab State, to ascertain the nature of the remains at the site, [1] which had already been damaged to a very large extent by a contractor.

While no traces of any structures were found in the excavations, the ceramic and other evidence indicated the presence of typical Harappan, Bara and Pre-Harappan traditions; one of shapes of the dish-on-stand recalled the corresponding form from Cemetery II at Harappa.

Particularly interesting was the discovery of four sherds from the site, two of which contained inscriptions in typical Harappan characters, while the other two had a single graffito each. The inscriptions are described below :

1. Harappan inscription, comprising five signs, engraved before firing on the neck portion of a funnel-shaped pot in red ware which was perhaps slipped. The sherd was found from CHS-17, A1, Qdt. 2, layer 12, at a depth of 3 *m.* below the surface. The inscription is complete (pl. I top). (Referred to hereafter as No. 1.)

2. Harappan inscription, consisting of three signs[2] on the rim of a red ware pot (sherd). The characters were engraved before firing. From the stray collection at the site. The inscription is complete (pl. II middle). (Referred to (Referred to hereafter as No. 2.)

3. A single sign engraved after firing on a red ware pot(sherd). From the stray collection. Perhaps it formed part of an inscription (pl. III bottom right). Referred to herafter as No. 3.)

4. Indeterminate pre-firing graffito mark on a red ware pot(sherd). From the stray collection. Perhaps it was an isolated sign (pl. III bottom left). (Referred to hereafter as No. 4.)

CHANDIGARH No. 1	CHANDIGARH No. 2	CHANDIGARH No. 3	CHANDIGARH No. 4
MACKAY, LXXXIII, 184	MARSHALL, CIX, 231	MARSHALL, CV, 61	VATS, CII, 7
MARSHALL, CVIII, 154	MARSHALL, CXV, 560	MACKAY, LXXXV, 134	
MARSHALL, CVII, 107	MACKAY, LXXXIII, 11	HUNTER, XI, 214	
VATS, LXXXIX, 113	MARSHALL, CXIII, 466	HUNTER, XXV, 486	
VATS, LXXXVII, 46	MACKAY, XCI, 15		
VATS, XCII, 280	MACKAY, LXXXIX, 335		
KALIBANGAN	HUNTER, XII, 255		
KALIBANGAN			
MEGALITHIC LAL, XVII, B, 1			

Fig. 1.

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OBSERVATIONS

A comparison of the inscriptions and single graffito marks on two sherds from Chandigarh with the inscriptions from other Harappan sites is shown in Fig. 1. It may be seen that whereas most of the signs, particularly those in Nos. 1 and 2 are found in various examples elsewhere, there is no inscription identical to the Chandigarh inscriptions. In fact the sign which is the initial sign in both the complete inscriptions (taking the direction of writing from right to left), does not also occur frequently in the Harappan inscriptions from other sites, where, in most cases, it appears as In two cases, this sign occurs as the initial sign: one on a steatite seal from Mohenjo-daro,[3] and another, from the same site, on a stamped inscription on the neck of a pot.[4]

The sign , which occurs as the terminal sign on Chandigarh inscription No. 1, is a common Harappan sign, but is rarely used as the terminal sign. One of the examples of this sign as the terminal one is on a seal from Harappa.[5] The sign , which is the penultimate sign on inscription No. 1, from Chandigarh, also does not seem to be a common Harappan sign. However, in one of the sherds from Kalibangan is inscribed a similar sign before firing. Whether it is connected with signs ,[6] [7] [8] and [9] requires further study. Apparently it is a new Harappan sign. The solitary sign, No. 3, also does not occur in Harappan inscriptions elsewhere, even though we have the signs ,[10] ,[11] ,[12] and .[13]

As has been stated above, none of the Chandigarh inscriptions is identical with the Harappan inscriptions from other sites. However, juxtaposition of certain signs can be observed in a few cases. For instance, the combination of signs 2-3 as in No. 1, can be seen in a large number of Harappan inscriptions, a few examples of which are shown in col. 1, Fig. 1. The combination of the last two signs in No. 2 is again noticeable from Mohenjo-daro where we have an inscription [14] and another which is [15].

Of some significance is an inscription stamped on the neck of a pot from Mohenjo-daro,[16] where occurs as the initial sign. However, the inscription on the pot is

as compared to inscription No. 2 which is . It may also be added that the sign also occurs on megalithic pottery.[17]

The sign in No. 4 is an unusual one and does not seem to be a typical Harappan sign. Whether the sign , occuring as graffito mark on a potsherd from Harappa[18] can be regarded as similar to this one, is not certain.

Finally, it may be seen that in one of inscriptions (No. 1), the terminal sign is There are not many inscriptions having as the terminal sign; one of the examples is an inscription from Harappa,[19] where we have as the terminal sign.*

B. M. Pande

NOTES

1 For a brief note on Chandigarh excavations see, Nirmal Chandra Ghosh, 'Protohistoric Punjab : More Evidence and New Theories', *Conflux*, Vol. III, Sept. 1971, pp. 19-20. Preliminary information taken from *Indian Archaeology 1970-71*, Chap. I. Sarvashri J. S. Nigam, N. C. Ghosh, R. K. Pant and the present author conducted the excavations. Also see, J. S. Nigam and N. C. Ghosh, 'Incised decoration on Protohistoric pottery from Chandigarh', Paper read in the V Annual Session of the Indian Archaeological Society, held at Bombay (March, 1972) (in press).

2 The seven vertical lines enclosed within brackets are being considered as a single sign for the present, since it is a composite sign even though formed by different sets of signs.

3 E. J. H. Mackay, *Further Excavations at Mohenjo-daro* (Calcutta, 1938), Vol. II (Plates), pl. LXXXVI, no. 184. Also illustrated in B. B. Lal, 'From the megalithic to the Harappa: tracing back the graffiti on the pottery', *Ancient India*, no. 16 (1960), pl. XVII B, 2, p. 13. Lal has also shown the occurrence of this sign on a megalithic pot as well, pl. XVII B, 1.

4 Sir John Marshall, *Mohenjo-daro and the Indus Civilization* (London, 1931), vol. III (plates), pl. CXV, no. 560.

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*Grateful thanks are due to my colleague Shri M.S. Mani for drawing the chart accompanying the paper. The photographs are courtesy, Archaeological Survey of India, New Delhi.

5 Madho Sarup Vats, *Excavations at Harappa* (Calcutta 1940), vol. II (Plates), pl. LXXXVII, no. 46.

6 *Ibid.*, pl. XCII, no. 290; this has not been included in the chart.

7 *Ibid.*, pl. XCII, no. 280.

8 Pre-firing graffito from Kalibangan, KLB-2, A5, Qd. 3, layer 3, reg. no. 13003.

9 Vats, *op. cit.*, XCIV, no. 345; not included in the chart.

10 Mackay *op. cit.*, pl. LXXXV, no. 134.

11 G. R. Hunter, *The script of Harappa and Mohenjodaro and its connection with other scripts* (London, 1934), pl. XVI, no. 310. The inscription is perhaps the same as in Marshall, *op. cit.*, pl. CV, no. 61.

12 *Ibid.*, pl. XXV, no. 486

13 *Ibid.*, pl. XI, 214.

14 Marshall, *op. cit.*, pl. CIX, no. 231; also see, Hunter, *op. cit.*, pl. XIII, no. 251;

15 Mackay, *op. cit.*, pl. LXXXIII, no. 11.

16 See above f.n. 4.

17 Lal, *op. cit.*, pl. XVII, B, 1, p. 13.

18 Vats, *op. cit.*, pl. CII, no. 7.

19 *Ibid.*, pl. LXXXVII, no. 46.

Ornithology in Protohistoric Archaeology of India

INTRODUCTION

The study of birds of the protohistoric period in India provides us with the evidence through their skeletal remains, and representation in terracotta and painting on pottery about the peacock, the dove, the goose, the pheasant, the crane, the fowl, the partridge and the duck. The earliest examples of these are from the Harappan sites like Harappa, Mohenjodaro, Rupar, Rangpur, Lothal and Kalibangan ; likewise examples are also available from Ahar and Prakash which are post-Harappan in cultural content.

In sum, the excavations of some of the protohistoric sites have given us the evidence of terrestrial, acquatic and aerial birds.

CLASSIFICATION :

The systematics of ave-fauna of protohistoric archaeology, in brief, is as follows:

Class — Ave (birds)
Sub-Class — Neornithes (true birds)
Order — Gallinae
Gallus sp.

The skeletal remains of *Gallus sp.* were recovered from archaeological excavation of Mohenjodaro[1], Harappa[2], Lothal[3], Rupar[4] and Kalibangan[5]. While the bone remains of *Gallus gallus* (domestic fowl) were recorded at Ahar[6], at Mohen-jodaro[7] terracotta figures of the fowl have been found.

Order — Galliformes
Family — Phasianidae
Pavo Cristatus
(Pea-fowl)

The skeletal remains of pea-cock and pea-hen have not been noted so far in excavations. However, the fascinating bird seems to have caught the fancy of man quite early due to its sheer beauty and hence its depictions on pottery from excavated sites of Harappa[8], Prakash[9], Rangpur[10] and Mohendaro are conspicuous. The significance is all the more immense as peacock holds in India the status of a national bird.

Gennaeus hamiltoni
(Pheasant)

This bird was noticed as a model at Mohenjodaro.[11]

Francolinus francolinus
(The black partridge)

The skeletal remains of black partridge have been recorded from the excavations of Rupar.

Order — Columbiformes
Columba sp.
(Dove)

A dove on a pedestal at Mohenjodaro[12] and Chanhudaro[13] are notable. Dove[14] is characteristic in cooing a song and in its abrupt stoppage. It is a smaller member than the pigeon. Pigeon was also recorded at Chanhudaro.[15]

Order — Anseriformes
Family — Anatidae
Anser sp. (goose)

Depiction of this bird on a potsherd from excavations of Mohenjodaro is notable. Technically, the female is called goose while the male is known as gander.

Anas sp.
(duck)

Representations of the duck have been noted on potsherds from Lothal[16], Rangpur[17], Mohenjodaro[18] and Navdatoli.[19] It is known that the duck is usually referred to female one, the male one being called drake. The drake can be distinguished from the duck by the curly feather in his tail.

Order — Gruiformes
Family — Gruidae
Grus sp. (Crane)

Crane appears in the form of depictions on potsherds from the excavations of Prakash[20] and Lothal.[21]

Order — Gruiformes
Anthropoides Virgo
(De moiselle crane)

This type of crane has been represented as a design on Nal[22] pottery.

Order — Falconiformes
Family — Accipitridae
Aquila sp.
(Eagle)

One of the seals of Harappa[23] indicates the depiction of eagle in flying attitude. Similar birds have been represented on a jar from Periano-Ghundai[24], Zhob Valley. The diurnal bird of prey with hooked beak, talons and keen vision is remarkable for robbery and as scavenger, and as such drew the attention of the Harappans. Depictions of flying birds of family Accipitridae like that of kite or vulture have also been recorded at Mohenjodaro.

Order — Passeriformes (Perching birds)
Sub Order — Passeres (song birds)
Family — Corvidae
Corvus sp. (Crow)

Probably, crow is depicted at Lothal[25]. The Indian house crow known as 'Corvus splendens' was not new to the Lothal people for it is tame and useful as scavanger.

SUMMARY

It may thus be seen that ornithology is important in protohistoric archaeology. The kaleidoscopic beauty in birds perhaps captivated the imagination of man in ancient times and as a result birds in terracotta and painted depictions appear. Some of the above cited birds, in all probability, played a vital role in food economy, apart their dung serving as guano fertilizer.

Avine fauna largely of Indian protohistoric times relate to tropical climate. The birds such as the fowl. duck, goose, peafowl pheasant, crow, pigeon and dove represent cosmopolitan distribution. They survive well in tropical as well as in temperate climates. The water birds of crane, goose, duck live near the source of water. Vulture and eagle also enjoy wide scope of distribution especially in the Old World in varied climates. It is to be noted that evidence of protohistoric Indian birds is primarily from their depiction rather than from direct skeletal remains. The birds' skeletal remains, which are delicate, apparently were not well preserved by nature and as such protohistoric excavations in India revealed scarce remains of bird.

—V. V. Rao

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11. Mackay, 1938 *op-cit.*, pl. LXXIV-3.
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16. Rao. *op. cit.*, pl. XLVIII-2.
17. *Ibid.*, p. 130, pl. XXV-14.
18. Mackay, 1938, *op. cit.*, Vol. I.
19. Sankalia *et al*, *Excavations at Navdatoli, 1957-59*, p. 217, Fig. 90, GD. 631.
20. Thapar, *op. cit.* (1962 and 1965) p. 48, Fig. 12, No. 5, pl. XV-5.
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A Socio-economic Note on Tribes and Peasants

The tribes are characterised by the "roving bands" of food gatherers. These bands live in camps around which there are plenty of wild animals and wild edible plants. As these food supplies are exhausted, they move to newer places. They have little idea about the conservation of food supplies. Although advanced hunters have been stock-piling their food supplies yet this surplus food is entirely of a different nature than the surplus food of the peasant stage. Unlike the latter, it is neither recurrent in nature, nor it is quantitatively sufficient to support the dependent classes.

The peasants are the food producers. Firth defines them as "any society of small producers (who produce primarily) for their own cosumption". He says that the Hopi Indians represent such a society of small producers. Eric Wolf defines them as "a community of farmers for whom agriculture is a means of livelihood and a way of life". Those agriculturists, and who look upon land as capital, and commodity, are not peasants but farmers. The peasant has the actual control of the land, he ploughs, and is tied to it by sentiment and tradition. The actual control does not necessarily mean ownership. He may be an owner or a tenant of the land, but he should have such control upon the land which enables him to cairy on a common and traditional way of life.

Historically, the transition from tribal stage to peasantry was a very protracted process which started around 8000 B.C. (Near East) and continues even today in certain areas. This transition was undoubtedly a landmark. It had completely transformed not only the material complex of man, but also his mental outlook. The changes have taken place in the choice of settlements, in the construction of houses, in tools and technology, production, distribution of food supplies, and, clothings, social stratification and religious belief. Even the gods have undergone a change.

PRIMITIVE ECONOMY

Primitive economy involves three basic questions :

1. How are the goods and services needed for human societies produced?
2. How the goods and services that are produced are distributed?
3. How the goods and services, that are produced and distributed, are consumed?

These questions concern the pattern governing the human activities and the social interaction involved in the production, distribution and consumption of goods and services.

PRODUCTION

In the hunting stage male was involved in hunting, where as the female was engaged in the collection of wild edible plants. The children assisted the adults, probably the females. All this could be inferred from the present day tribal life.

The true division of labour, which depends upon the production of exchangeable surplus starts with the peasant societies, wherein, through recurrent surplus food-supplies, such wholetime workers, as the potters, weavers, floormakers, thatchers, canoe-builders, carpenters, etc., are given subsistence.

DISTRIBUTION

In the hunting stage the distribution unit is the biological family. In larger units the distribution takes place through barter or gift exchange. Since goods are few, there are no markets.

In the later peasant societies regular trade comes into operation. Here surplus food gives rise to artisan classes which make luxury goods like beads, deluxe wares, ete. It gives rise to symbiotic trade relations, between the peasants and the tribal hunters, the latter being the suppliers of raw material and thus may have received the finished goods or other articles of choice, in exchange.

CONSUMPTION

Where the patterns of production or collection and distribution is simple, the consumption pattern is also simple. In hunting societies the goods are consumed within families or groups, as the collection is limited. In such a case the question of ownership does not arise.

In peasant societies due to efficient technology and true division of labour, the goods are consumed through exchange and trade, and consumption circle widens. Ownership of property also creeps in the society.

SOCIAL STRATIFICATION

The tribal societies of the Early Stone Age were composed of biological or primary families. They were based upon kinship relations. In kinship rela-

tions the individual equality is assumed and agnatic bonds form fundamental basis of these relationships. Here ties are less important. Lineages or clans tend to be corporate units. Sometimes they are the principal units for land ownership, defence, economic production, distribution and consumption. Political power is vested in the clans and the chief of the clan is the oldest man. The rule, however, varies from tribe to tribe.

The kinship relations do not hold good in the peasant society where the basic characteristics are hierarchy, inequality and subordination. Here we have the hierarchy of economic classes. Private property comes into existence in peasant societies. Therefrom arise the causes of mutual conflict, and leads to the subsequent rise of the political authority.

There also arises the problem of the inheritance of private property. It is believed that in matrilineal societies, the inheritance passes through the mother to daughter. In patrilineal societies the inheritance moves from father to son.

It is believed that in the prehistoric times, before the arrival of plough, the society was matrilineal. The rule cannot be treated as universal. However, the appearance of the figurines of "Mother goddesses" in early peasant societies of north western India, has been taken to indicate the matrilineal society. This is not a very convincing evidence, as the worship of Durga in historical times in India and of Venus in Europe do not indicate a matrilineal society.

RELIGIOUS BELIEFS

In the tribal societies the stress is upon short term pragmatic functions of the religion. The clans have their own totems, which serve as their guardians. They are not meant to be killed. The rituals are magical and sacrificial in nature. They are meant for the fertility of man and the beasts and for the success in hunting. Desires are expressed through paintings, which are naturalistic and utilitarian in character

The religion of the peasantry is both pragmatic and transcendental. The pragmatic aspect implies the fertility of the soil and seasonal rains. This leads to the creation of the rain gods like Indra and Varuna and the goddess like Prithivi. The transcendental functions imply long term welfare of the society such as *Varnasramadharma*, *Samskaras*, etc. It involves the explanation and maintenance of social institutions

Another change in religious belief was the transformation of group souls into individual souls. Along with it the break of the kinship relations gave the individual a sense of isolation from the community life. This gave rise to the concept of fate and

cycle of life based upon the individual's *Karma* The universal unity was sought to be created by the creation of the Supreme Soul.

Probably, the belief in the after-life was there in the Late Stone Age of India and Europe, and this transition had its effect upon the disposal of the dead. It resulted in the construction of elaborate tombs and in complicated mortuary rituals. The graves were still dug into the earth yet they were covered with mounds of earth or stones (cairns). With the rise of the megalithic traditions massive sepulchral structures came into existence. The dead were buried with the entire paraphernalia that was used by them during their life-time, with the belief that it will be useful in the after-life.

R. P. Sharma

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A note on the influence of Raw Material on Blank-Detaching Techniques[1]

A recent study by the present author, of frequencies of each blank-type within the representative industries of Middle Palaeolithic cultures of the sub-continent has shown that there exist technological variations.[2] These, however, do not seem to correspond with the typology of the industries. This being the case a question arose whether the raw material rather than the tool-typology was the main guiding factor behind the adoption of the blank-detaching techniques. The present paper is, therefore, an attempt to examine whether the raw material conditioned the frequency of advance techniques. Connected with this is the question whether the size of the blanks was also determined by the nature of raw material. This too will be examined in the course of the present paper.

At first a selection of representative industries from Middle Palaeolithic collections of the Indo-Pakistan sub-continent was made. We made a point to select only such industries as contained a fairly good number of artefacts.[3] Hence only twelve industries were found suitable for the purpose. They are Vedachalluvu,[4] Luni Basin,[5] Adamgarh,[6] Anagwadi,[7] Nandipalle,[8] Kurnool district group,[9] Nalgonda district group,[10] Kovalli,[11] Vammanu,[12] Tamkur,[13] Mahadeopiparia,[14] and Ramgarhwa pahar (a factory site examined by the author with Shri P. C. Pant, in the District of Allahabad, in the vicinity of the river Belan, a tributary of the Tons).

In order to determine the influence of raw material over the technology, the entire group of twelve selected industries has been classified into three groups, i.e., (I) made on rough grained material (rocks – mainly quartzite) (II) made on both, rough and fine grained material (the latter are minerals — mainly those of quartz group) and (III) fine grained stones. Each group consists of four industries. In the first group Vedachalluvu (VDCH), Nandipalle (NDP), Vammanu (VMN) and Ramgarhwa (RMG), have been included as they are made on quartzite. Those industries which are made on both types of raw materials are Mahadeopiparia (MPR), Adamgarh (ADG), Anagwadi (ANG) and Kurnool (KRN). The last group is formed by the industries of Tamkur (TMK), Nalgonda (NDG), Luni (LNI) and Kovalli (KVL). The percentage[15] of Levallois element (which includes both flake and point) within each industry has been calculated and shown in fig. 1, A,B,C, classified within the said three groups.

The diminishing tendency of curves both in the case of maximum and minimum points shows vast variation in the three groups. As a result of this analysis it was noted that Levallois technique was much more frequently employed in the areas where quartzite was used for manufacturing tools. Conversely, it was least in vogue in those industries which were made on fine grained materials (cf. fig. 1, A & B). In case of such industries where both the types of stone were used, it is quartzite which seems to be more suitable for manufacturing Levallois flakes and points. Besides, there is not much variation between the maximum (13%) and minimum percentages (8%) in the third group but in the first group, it ranged from 13% to 48%. The second group with its range from 12 %—33 % can be placed in between the two. The two curves of figure 1, D. show the maximum percentages of Levallois and blade element separately within the three groups. The graph shows that the peak point of 48 % is reached in the first group while in the last it drops down to 11 %. It is further noted that the percentage of blade element is lowest in the first group and highest in the last, i.e., made on rough grained stone, like quartzite, and fine grained stones, respectively.

In order to examine the influence of the composition of raw material on the size of the blanks we have selected five industries for a discussion in detail. They are Vedachalluvu, Tamkur, Nalgonda, Nandipalle and Mahadeopiparia. The blanks have been sub-divided into two groups, i.e., flakes and blades. In order to make the size-range of the flakes, the maximum length-breadth average[16] of each specimen has been calculated first. Thereafter, each of them has been grouped within the small units of 20 mm. The percentages of the each group of specimens have been calculated within the total number of blanks. In case of blades the same grouping is done with their maximum length measurements, for unlike the flakes they have a definite proportion of 1:2 in between the length and breadth. The following discussion is based on a histogram of two industries each made on rough grained and fine grained material and a culmination graph showing the size of flakes made on fine grained stones and rocks separately. All of these have a considerably good number of artefacts.

The size of the flakes ranges between 10 and 89 mm. (fig. 2), with the dominace of 30 and 59 mm. size group, which show greater variation than the blades. But most of the blades fall within 70-89 mm. group. The statistical analysis of the industries made on rough grained and fine grained material does not give a positive answer to the question whether the nature of raw material also influences the size of the implements made on blanks. In case of Mahadeopiparia industry (fig. 3), however, the curves do indicate that the nature of raw material has affected the size of the implements made on blanks. The curves show the size-mean[17] of each flake type[18] of the industry. A suggestion can therefore be made that if both the stones are available the size of the flakes made on rough grained on the one hand and those on fine grained

on the other show a variation in their respective sizes. The variation between the maximum and minimum points of the two, in case of quartzite is 45 to 64 mm., while in case of fine grained material it is only 26 to 41 mm. Thus flakes made on fine grained stones are at least 20 mm., smaller then the other group of flakes.

To summarise the above discussion one may note that Levallois technique seems to be more frequently practised in the areas where quartzite was available, and was less employed on silicious minerals whereas for blade detaehing technique the latter stone was found more suitable than the former. It has to be admitted that this is only a preliminary study and no definite conclusions are possible. The study nevertheless highlights the need for carrying out more such detailed analyses. It will only then be possible to confirm the observations made above.

ACKNOWLEGEMENTS:

The author is grateful to Shri P. C. Pant for his valuable suggestions and guidance and to Dr. K. K. Sinha for going through the manuscript. Thanks are also due to Prof. H. D. Sankalia and Dr. R. V. Joshi, for providing necessary facilities to study the collections preserved in the Deccan College, Poona, and Prehistory Branch of the Archaeological Survey of India, Nagpur, respectively.

Vidula Jayaswal

NOTES

1 Blank-detaching techniques include all the techniques employed for detaching flakes and blades.

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3 As suggested by Bourgon for all the statistical methods if the results are desired to be on much safer grounds, the objects on which the methods are proposed to be applied should be in considerably good number. One hundred pieces, is the minimum limit for a good study. See, Bourgon, M., 'Les industries Mousteriennes et per-Mousteriennes du Perigord', *Archieves de l' Institut de Paleontologie Humaine*, Memoire, 27 (1957).

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11 Pappu, *op. cit.*

12 Reddy, *op. cit.*

13 Paddayya, K., *Pre- and Protohistoric Investigations in Shorapur Doab*, Ph.D. Thesis, Deccan College, Pune, 1968.

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15 $\text{Percentage} = \dfrac{\text{No. of Levallois blanks} \times 100}{\text{Total number of blanks}}$

16 $\text{Average} = \dfrac{\text{Length} + \text{Breadth}}{2}$

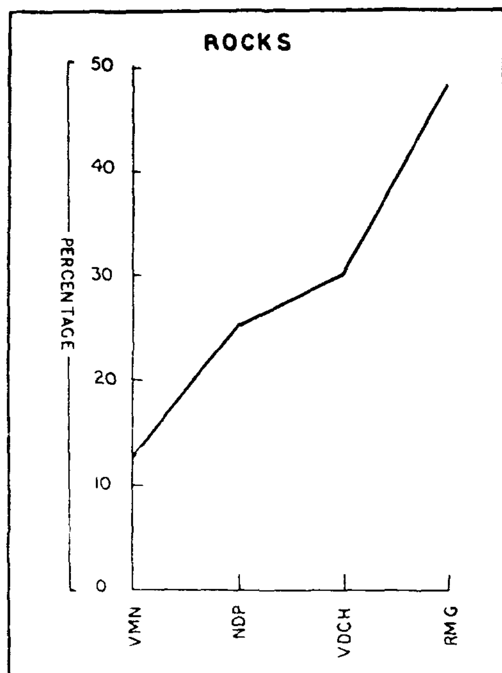
17 Mean of the length-breadth average of each flake group has been calculated after the following formula:

Mean = Σ fx/N where
Σ = Sum total of separate meaures
f = Number of scores
x = Mid point
N = Total number of specimens

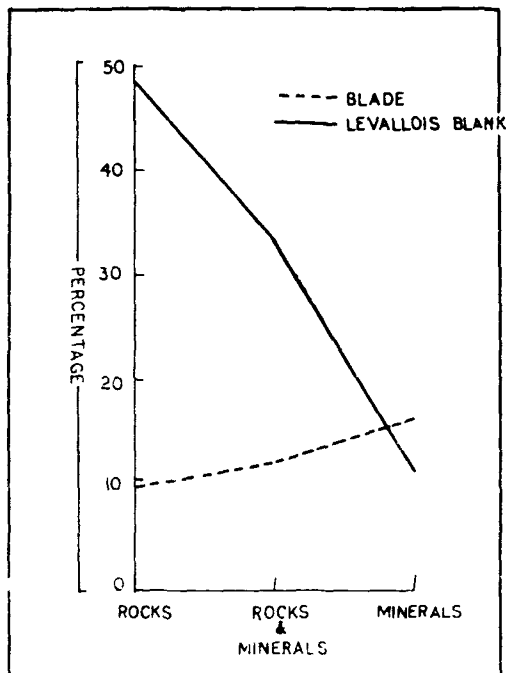
For details see, Garrett, H. E., *Studies in Psychology and Education* (Bombay, 1962).

18 In the graph unprepared flakes have been numbered (I), flakes with unprepared dorsal surface and prepared striking platform (II), flakes with partial preparation (III), prepared flakes (IV), Levallois (V) and Levallois points.

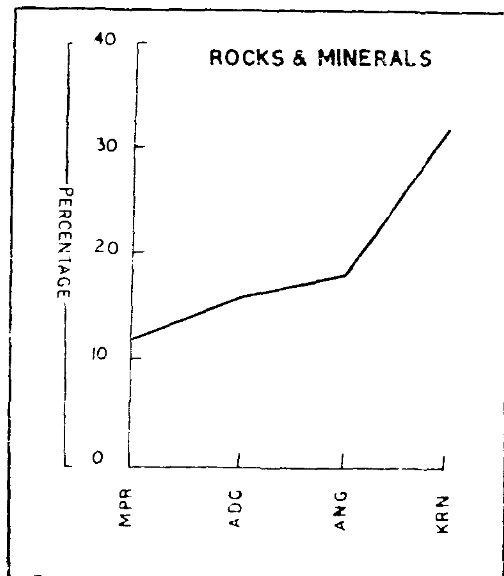
FREQUENCY OF LEVALLOIS & BLADE ELEMENT



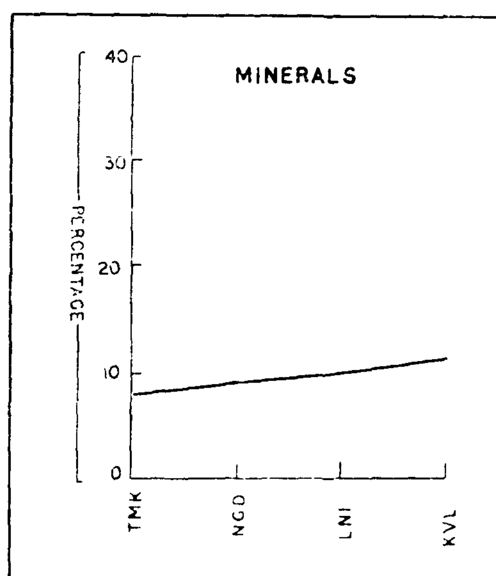
A



D



B



C

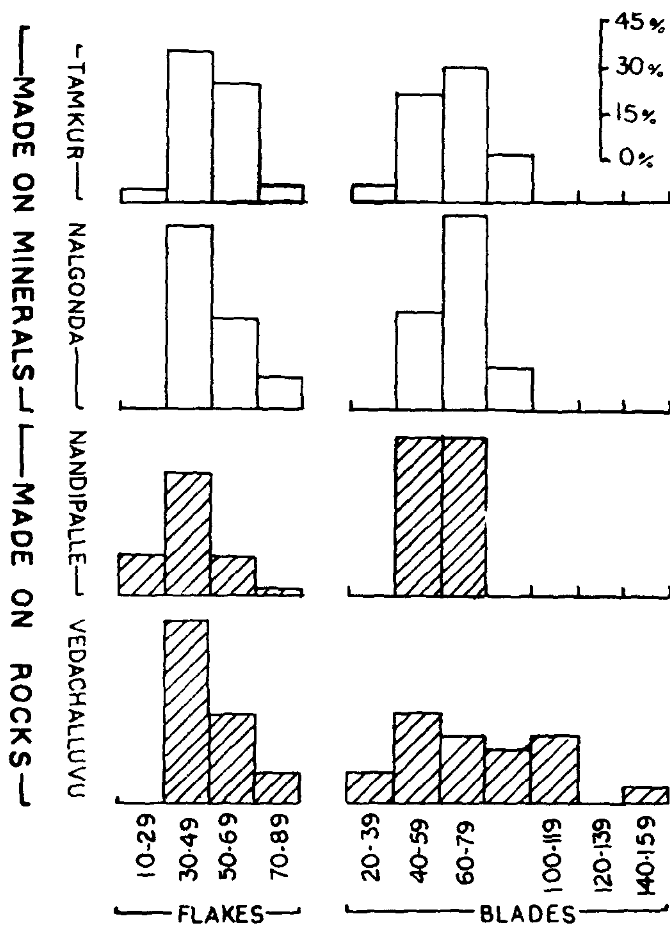

SIZE OF THE BLANKS
45%
30%
15%
0%
TAMKUR
NALGONDA
NANDIPALLE
VEDACHALLUVU
MADE ON MINERALS
MADE ON ROCKS
10-29
30-49
50-69
70-89
20-39
40-59
60-79
100-119
120-139
140-159
FLAKES
BLADES

Fig. 2

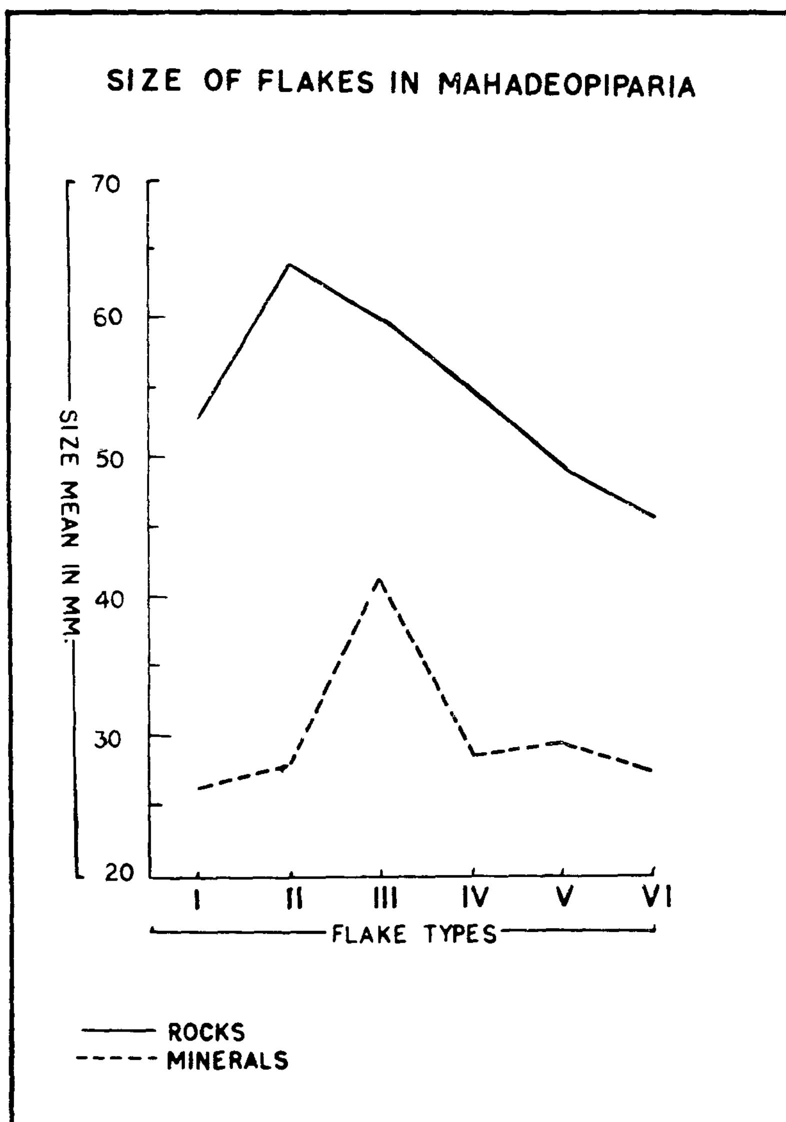

SIZE OF FLAKES IN MAHADEOPIPARIA
SIZE MEAN IN MM.
70
60
50
40
30
20
I
II
III
IV
V
VI
FLAKE TYPES
ROCKS
MINERALS

Fig. 3

Some Rare Antiquities from Recent Excavations in Bihar

Excavations in 1972 at Champa and in 1971 at Chirand yielded some rare antiquities throwing unexpectedly new light on the socio-economic life and artistic skill of the people in Bihar in ancient times.

CHAMPANAGAR :Five km. west of Bhagalpur town is believed to be the site of the ancient city of Champa famous in the days of the Buddha. Excavation by the Patna University team have brought to light a mud rampart with two phases of construction. As the virgin soil has not yet been reached, it is difficult to state about the height of the wall of the first phase. But pottery discovered in the lowest level include black-and-red ware sherds with weathered surface, black slipped ware, fragments of dishes and bowls in grey ware and a few early types of N.B.P. sherds. It is reasonable to presume that the foundations of the fortification would go down to 6th century B. C. A trench taken outside the fortress near Champa village, though not dug up to the natural soil as yet, has yielded remarkable antiquities. The earliest levels exposed so far have yielded fragments of early N.B.P. types and fragments bearing painting in pinkish colour. In the early N.B.P. level, dated to 6th-5th century B.C., we come across a broken ivory figure, stone moulds for making ornaments, toy-cart made of tortoise shell, and a *nagin* figure in terracotta. These are described one by one below :-

(a) *The Ivory Figure* (fig. 1). This is a unique find as such a large female figurine of ivory has not been reported from any site dated to the 6th-5th century B C. The figure has been blackened, because of accidental firing, and the right hand and the leg are missing. It is a very well proportioned object, 16 cm. in length from waist to foot, and the length of the head is 2.9 cm. It has developed breasts, slender waist and long arms and fingers. The eye-brows and eyes have been well delineated, the nose is prominent aquiline and the forehead is broad, the face is oval, and there are holes for fixing the hair or hair wig. There are bangles on the left hand, and sandal in the feet. What lends special significance to the figurine is that it is hinged at the neck, shoulder, elbow, wrist and knee. The different parts of the limbs were fashioned out of ivory pieces separately and then later screwed together at proper places. The general appearance of the face gives flattish impression. Wooden figures of this type have been found in Egypt and west Asia belonging to earlier times. It is difficult to say whether this figure is an imported object, or fashioned after some foreign model. It is significant not only from the artistic point of view but also may throw light on India's contact with west Asia and beyond.

(b) *Stone Moulds*: (fig 2a and 2b) According to the early Buddhist and Jain literature Champa was very flourishing city having brisk trade with different parts of the country and outside. It was a large business centre, and it appears that goldsmith's profession was at its height. These stone-moulds are for making ornaments. Such stone moulds have been found in a large number. Two sets of specimens show that ornaments of specific shape and design were made by pressing together the moulds bearing the same shape and design. Even holes have been provided for tying the two moulds through a thin wire and where there is no hole or holes as such traces of regular lines produced through the tightening of the thin wire can be specially noticed on the outer ends of the moulds. Channels have been provided in the moulds so that the liquid material in excess of what could be retained in the design-portion, may flow out. The moulds reveal various shapes and designs of ornaments, 1 special mention may be made of chains of varied designs (namely bead-shaped, circular leaf-shaped, elongated leaf-shaped, and *makara*-shaped necklaces) pendants, earring and talismans. Moulds for making talismans or amulets have on the obverse two sets of carving depicting human and animal figurines, and in each set the carved figures in panels are separated by a railing, which is shown at both the lower and upper ends of the panels for ensuring the decorative effect. On the reverse side can be seen a rider on horseback, charging with a spear in front. The dynamism of the figure and his holding the reins of the running horse has been well expressed. The stone moulds not only throw welcome light on the development of goldsmith industry of the period, but they also, in a way, reveal the excellence achieved in technology. The artistic skill in inscribing the human and animal figurines is to be noted. The design of the railing with uprights and *suchis* is a reminder that the railing is a much earlier architectural feature than the Bharhut and Sanchi railings. But here there are no circular medallions. The ornament moulds may be detailed as follows :-

> mould showing (i) triple rows of small balls forming a check pattern for a chain, (ii) elongated leaf-shaped chain, (iii) bead-shaped chain, (iv) earring or ear-top, (v) a *makara* shaped chain, (vi) a crescent shaped pendant, (vii) a circular leaf shaped chain.

(c) A toy-cart made of tortoise shell showing double circular design over the body and the wheel. The wheels are solid. The toy-cart is 12 cm. in length. The length and thickness of the body are 11 cm. and 8 cm., respectively. The diameter of the wheel is 5.5 cm. and the hub of the cart is 8 cm. The breadth of the cart including wheels is 6.3 cm. The significance lies in the material used for making the toy-cart. and in the wheels being solid, without spokes.

(d) a terracotta *nagin* figure whose head portion is represented by snake-god, and the remaining portion, including legs, represents abstraction of a human figure. This is an early representation of the concept of semi-devine *nagas* having human forms.

(e) (fig. 5) A broken terracotta female figurine wearing ear-lobes and a heavy necklace has peculiar arrangement of the hair. The eight weapons (or *Ayudhas*) shown over her head from left to right are *Parasu, Chakra, Sakti, Gada, Vajra*, (thunderbolt), *Trisula, Dhanu-bana*, and *Ankusa*. The figure appears to represent the mother-goddess Sakti or later Durga who was armed with the characteristic weapons of the great gods. The early recognition of Sakti-worship is significant. Later the mother goddess is endowed with eight hands each holding characteristic weapon. This has been found in the (fig. 4) Sunga strata(post-N.B.P.).

CHIRAND:

Chirand is now rightly famous for its advanced neolithic culture. Situated on the bank of the Ganga, about 6 miles away form Chapra, the headquarters of the Saran District, Chirand mounds have given us a historic sequence from the neolithic to the Pala period; hardly, any other site has given such a long and stratified sequence of India's cultural history. It has yielded many antiquities of the Sunga, Kushan and Pala periods. In 1971 excavation in CRD XIII from layer 6 corresponding to the Mauryan period with good type of N. B. P. sherds was found a terracotta mask (fig. 6 and 7) whose measurement is as follows:—

Length: 35 cm. (from head to the lower portion of the mask)
Breadth: 32.5 cm. (from left ear to right ear)
Inner diameter of the lower portion of the mask - 23 cm.

The mask is double-faced—female and male. It must have been used at some pantomimes. Kautilya's *Arthasastra* refers to many dramatic performances in *Utsavas* and *Samaja* gatherings. The importance of this discovery lies in the fact that it is stratifically to be assigned to 4th-3rd century B. C., and gives an insight into the social amusements of the period. The earliest reference to something like mask may be traced in the *Mahabhashya* (3/1/26) where the actor in drama representing Kamsa uses *mukharaga*, and the same actor puts different *mukharaga* for playing the role of Rama. (From Nevasa a big pot looking like a mask has been reported but it is to be placed in Ist or 2nd century A. D.) Bharata's *Natyasastra* refers to Pratisirsha which may be equated with mask. But there is no reference to terracotta mask.

B. P. Sinha

A Stylized Human-Faced Mask from a Megalithic Burial

More than fifty years ago a group of megalithic tombs was opened by Longhurst at Gajjalkonda, District Kurnool, Andhra Pradesh. Although before excavations the tombs appeared to be cairn-circle type, after excavations, 'cist chambers' were also found in them with passage from the south. In one case, the passage was 1.34 m. in length, 0.43 m. in width and 0.91 m. in height. The walls were built of stone slabs.

The excavation of the megalith was initially started by a group of amateur archaeologists but soon thereafter, Longhurst took over and completed the excavations on behalf of the Archaeological Survey of India. One of the tombs which was of the usual cairn type with cist and flagged passage yielded a few large-sized vases decorated with finger tip applique motif. The motif as well as the technique is similar to the one generally seen on the terracotta sarcophagi. However, unlike other monuments of this region this tomb did not yield any sarcophagus. The most noteworthy objects, however, were two slabs found in the grave. In this present note we have tried to re-examine and interpret the slabs.

The slabs were found embedded on the floor, about four feet (1.22 m.) apart against the eastern wall of the grave-chamber. The slab on the north was almost plain excepting two holes on top whereas the one lying on the southern side was more elaborately cut forming some kind of pattern or design. The size of the slab as available now is 4 feet (1.22 m.) by 2 feet (0.6 m.).

According to the excavator, the slabs "appeared to be supports for a shelf set up against the east wall of the tomb" even though "no signs of a shelf of any kind was found." Apparently, the excavator considered the slab to be much larger, and had, therefore, stated that the holes are confined at the top." Besides, the slab was also (inadvertantly perhaps) published upside-down. However, it appears to us that the stone is nearly a complete one and the cuts are in the middle. In that case, it was perhaps a stylized human form, the oblong horizonal slit representing the mouth, the two rough triangular-shaped cuts connote the eyes, and two arched cuts stand for the eye-brows. The projections below the horizontal slit perhaps signify the frills, which can be commonly seen in the tribal masks.

In view of the infrequency of representation of human form in Indian Megalithic remains, pottery, terracotta or any other medium, this stone slab attains a great importance, for, this is perhaps the solitary example even though a stylized one. It may be stated here that anthropoid sarcophagi were quite common in ancient Egypt,

Palestine and other countries. Anthropid urns were common in Lebanon and the Swat Valley. In Northern Europe and in the Iberian megalithic chamber-tombs, pottery is often found decorated with human face or *oculi* motif. Statue menhirs particularly from Southern France and many stylized human figures from megalithic passage graves of Europe are significant in this context.

If the above identification is correct, then it would be the first human representation found in a megalithic tomb in India. The similitude of passage graves and statue menhirs in the Western megaliths and Gajjalkonda passage graves and stylized human-faced mask is quite remarkable. However, the absence of skeletal remains and the presence of the stylized human figure suggest that the tomb at Gajjalkonda was probably a ritualistic one and the burial was represented by this slab.

—Nirmal Chandra Ghosh

NOTES

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A note on the Stucco Figure of Jambhala from Amaravati in Andhra Pradesh

INTRODUCTORY

It is well-known that in the early phase of Buddhism in Andhra, there was no representation of Buddha in anthropomorphic form. Only scenes from Buddha's Life and stories of his previous births or *Jatakas* were represented. It is only in the Gandhara school of art that the images of Buddha and Bodhisattva *Avalokitesvara* make their first appearance. The tradition of Gandhara school was continued at Mathura. As a credence to this were produced numerous Buddha and Bodhisattva images. Next to Mathura, Sarnath occupies a significant place, as a flourishing centre of Buddhist art till the days of Pala kings of Bengal. It is here that varied representations of *Vajrayana* Buddhists-the images of *Shadakshari Lokesvara, Ucchusma-Jhambala, Vasudhara, Manjusri, Tara,* the *Dhyani Buddhas*, etc., occur. The latest icons of Vajrayana were produced at the monasteries of Odantapuri. Nalanda and Vikramasila before the final extirpation of Buddhism from the land of its birth.

In determining the dates of the introduction of these different deities into the Buddhist pantheon the accounts of the Chinese travellers, Fa Hien and Hiuen Tsang, and some of the ancient texts like, the *Sukhavativyuha* or the *Amitreyasutta*, are of great value. None of the earlier works, particularly those of *Asvaghosa, Nagarjuna, Aryadeva* have any reference to the Dhyani Buddhas. It is only *Santideva* (9th cent A. D.) who, in his book *Siksa-Samuccaya*, refers to the names of *Aksobhya*, and *Amitabha* as *Tathagatas*. In his time, Tantra appears to have begun to wield its influence as is evident from the numerous references to Tantric works. As a sequel to this, many Sanskrit texts in Buddhist iconography like *Astasahasrik Prajnaparamita, Pamcaraksa Sadhanamala*, etc., came into existence. These works help us in identifying the Tantric icons.

At Amaravati (the famous Buddhist centre in Andhra Pradesh), as a result of the trial excavations[1] in the stupa area, considerable number of Tantric icons such as of *Tara, Ugra Tara, Maitreya, Avalokitesvara Padmapani Heruka*, etc., have been unearthed. Apart from these, a rare stucco-figure of *Jambhala*[2] was encountered within a shrine chamber. In the chronological sequence of the occupation of the site, these belong to the late phase (8th-9th centuries A.D.) which demarcates the last phase of Tantric Buddhism at Amaravati. Corroborating this, a few sherds of the Celadon ware, datable to 9th cent. A.D., were also found from this phase.

SHRINE CHAMBER OF JAMBHALA :

A little away from the *Maha Caitya,* to its east, has been unearthed a huge brick-built enclosure measuring 129′×62′ with an entrance of 4′-3″ width. The breadth of the enclosure wall is 3′-9″ and the entire structural activity pertains to the late phase ascribable to 8th-9th centuries A.D. The outer side of the enclosure wall is further embellished with a number of Tantric icons in the niches provided for them at the equidistance of 1′-6″. Within this massive enclosure lies what appears to be the shrine chamber of *Jambhala* (?) measuring 14′ × 14′. A mutilated stucco figure comes from this shrine. It might have been one of the tutelory deities installed in that chamber since the size of the chambers is too big for enshrining this solitary figure.

STUCCO FIGURE OF JAMBHALA: (plate I)

It is very much mutilated and hence is bereft of iconographic details. According to *Sadhanamala, Jamhhala,* should be—"of golden hue, big-bellied, with citron in the right hand and a she-mongoose in the left". However, in the present image, only a few of these traits are discernible. He is represented as an uncouth corpulent figure sitting in squatting posture. The right arm is broken. But it appears that it was folded and that it contained possibly a citron indicated by the ovalish lump on the chest of the figure. He has a pot belly. Interestingly, a parallel example of this, and contemporeneousto the *Jambhala* icon under study, but in stone (intact), comes from Paikpara, District Dacca. The image has an inscription of two lines on its back in Bengali script of the 9th century A.D,[3]

Several of *Jambhala* forms are referred to in the *Sadhanamala* which states that the parental *Dhyani Buddha* of *Jambhala* is either *Ratna-Sambhava* or *Aksobhya*[4]. The present icon of *Jambhala* could have been the emanation of *Ratna-Sambhava*[5]. Its association with *Vajra Tara,* another emanation of *Ratna Sambhava* is noteworthy. In the *Sadhanamala* only three Dhyanas describe Jambhala as single. As an emanation of *Ratna Sambhava* he may either be represented alone or in the embrance of his Sakti in *yab-yum*[6]. However, single represensations of Jambhala in *Lalitaksepa* posture occur in Nepal and at Vikrampur[7]. But what is significant in the Jambhala under review is its rare occurrence in stucco in association with other Tantric icons of 9th century A.D. Further, the provision of a chamber (probably a shrine ?) to this deity at Amravati, once a flourishing centre of Tantric Buddhism, all the more heightens its importance.

NOTES

1. Trial Excavations at Amaravati (North Latitude, 16°, 34′-45″, East Longitude, 80°, 24′-20″,) a small village situated 21 miles away from Guntur in Andhra Pradesh, was conducted by the author under the guidance of Dr. R. Subramanyam of the Archaeological Survey of India (*IAR-1958–59*, p. 5). The report of this excavation is yet to be published. This article is written with the kind permission of Dr. R. Subrahmanyam.

2. *IAR-1958-59*, pls. IB, and IC and II D.

3. N. K. Bhattasali, *Iconography of Buddhist and Brahmanical Sculptures in the Dacca Museum*, (Calcutta, 1929), pl. XI, (b) I.A. (iv) a-(1). The inscription reads:

Jambhala Jale (*ndra*)
ya svaha. (Bhattasali, *op. cit.*, p.35)

4. Jambhala emanated from Akshobhya, according to *Sadhanamala* in *yab-yum*. See B. Bhattacharya, *The Indian Buddhist Iconography* (Calcutta, 1958), p. 178 Generally images of Jambhala are to be met with in the Gandhara, Mathura, Sarnath, Magadha, Bengal and Nepal sculptures. Jambhala is known in Tibet (A. Getty, *The Gods of Northern Buddhism* (Oxford, 1914), p. 159, and Peiping (Bhattacharya *loc. cit.*, p. 179).

5. Jambhala is connected with wealth and is said to distribute gems, jewels and riches to his devotees. Again, Ratnasambhava means 'Jewel-born' whom Jambhala god of Wealth calls his sire.

6. According to the *Vajratara Mandala* of the *Nispannayogavali*, the Dhyani Buddha Ratnasambhava is the spiritual sire of Vajratara. (*vide* also Bhattacharya, *op. cit.*, p. 240.)

7. Bhattacharya, *op. cit.*, p. 238, figs. 176-178.

Note : *IAR* stands for *Indian Archaeology—A Review*.

An Armenian Cemetery of Hyderabad

Armenians pelong to a religious group of Christians who settled in places of the world as traders. While there zre many findings to prove the presence of the Dutch, French, the Portuguese and Britishers, this is for the first time we have the evidence of Armenians in the Deccan during the Qutub Shahi period.

'Chatri Metta' literally means a mound in the shape of an umbrella. The extent of the Cemetery mound is 74 × 47 metres. It consists of 118 burials. All the burials were covered by either oblong granite stones or highly polished fine grained black basalt. Inscriptions in Armenian script were found over 49 burials. The orientation of these burials is invariably east-west. The people seem to have belonged to the Greek Orthodox church. There is an enclosure wall about 1½ metres in height around these burials with only one entrance on the northern side. There are two pavilions near the western compound wall, each sheltering 3 burials.

In order to find out the nature of the burials the northern-most burial in the first pavilion was exposed. The grave pit, 46 cms. wide, was lined withstone masonary to a height of 1.26 m. Inside the pit, on the western and eastern sides, two small arches like structures were noticed in which head and feet were kept, respectively. The skeleton was lying flat with two hands on chest, on above the other. The burial was covered by a rectangular basaltic stone measuring 1.60 metres × 0.62 metres. It was inscribed in Armenian script of the 7th cent. A cross was carved at the top in high relief.

Trial excavation was also conducted inside a domed structure which revealed four child burials at different levels. The lower most burial of 1½ yrs. old infant was found at a depth of 1.25 metres. The second burial, found at a depth of 70 cms., was also of a child of the same age. The third burial was found a little above, at a depth of 65 cms. Except the skull, the pelvic and the knee caps, there were no bones; probably they had disintegrated. The topmost bur'al, found at a depth of 62 cms., was also of an infant.

During the scraping work, sherds of celadon ware of different varieties were recovered. Some sherds were beautifully painted in chocolate and blue with flower and triangular patterns; others were found bearing inscriptions in Roman character mentioning IYOTOKI, probably the name of a Japanese town or firm.

It appears from the available evidences that this cemetery was in use from 1662 to 1807 as both these dates are inscribed on two different tomb-stones.

—Mohd. Abdul Waheed Khan

Highlights of the International Symposium on Radiocarbon and Indian Archaeology - 1972

The above symposium was held from March 7-11, 1972, at the Tata Institute of Fundamental Research, Bombay and convened by Dr. D.P. Agrawal. About a hundred archaeologists and other scientists participated. Amongst the foreign delegates were : Drs. B. Allchin, F.R. Allchin, Gudrun Corvinus, G.F. Dales, J.A. Jarrige, Mme. Jarrige K.A.R. Kennedy, G. Possehl, M.B.I.Al Rashid, Arlene Zide. Most of the leading and active Indian archaeologists were present in the Symposium.

In this five-day conference, papers were read in five sessions: i) Pleistocene studies; ii) Protohistoric chronology; iii) Decipherment of the Indus Script; iv) Scientific techniques in Archaeological research; and v) Models on Archaeological data.

Discussions on specific problems pertaining to Pleistocene studies, Protohistoric chronological lacunae, basis and terminology of periodisation, and excavation technique were held in panels. The panel deliberations were problem-oriented being directed at very specific issues.

In the session dealing with Pleistocene problems, Al Rashid gave a review of the Malaysian prehistory. The Pleistocene studies on Belan area were reported by G.R. Sharma. The multidisciplinary studies on the Maharashtra coast using pollen, diatom, fossil, archaeologic, eustatic and geomorphic analyses brought home the possiblity of using a dated eustatic curve for temporal assignment of the Stone Age cultures. These studies also emphasised the multidimensional problems of the Stone Age prehistory and indicated a multipronged way to resolve them. Mrs. Allchin gave a broad review of the blade and burin industries of western India, reconstructing their environment, time and technology. Hegde read a paper on the background to early man in Gujarat.

V.N. Misra's synthesis on the Late Stone Age data evoked much discussion. Rajaguru and Sali's papers dealt with geological and geomorphic evidence on the climatic and tectonic changes in the Quaternary period. There was discussion also on the Stone Age terminology.

The Protohistoric session was opened with Dales' talk. In this comprehensive review of the north-western subcontinent, he acquainted the delegates with the latest

state of protohistoric research in that area. Jarrige's paper on the Pirak excavations evoked much interest, as some of the illustrated antiquities showed affinity with the north Indian Iron Age assemblages. A comprehensive discussion of the southern, as also the eastern neolithic cultures by Sankalia, brought out interesting new facts. The megalithic evidence from Vidarbha and Karnatak was explained by Deo with some new angles. The contributions of Lal Quila and Allahpur excavations, both in U.P. were pointed out by Gaur and Dikshit. There was heated discussion on the C-14 dates and Lothal stratigraphy. Vibha Tripathi's paper on the chronological perspective of the introdcction of iron in India gave an uptodate summary of the available and new evidence, and suggested that in any case iron in the north could not have been introduced much before *c.* 800 B.C. The reported Kausambi evidence of very early occurrence of iron and monumental structures was challenged by K.K. Sinha in his paper.

The session on the Indus script was very lively. Krishna Rao and S.R. Rao put forth their claims of decipherment in their lengthy papers. Mahadevan explained the results of computer techniques in his attempts to understand the script. His logical approach had preciseness and promise. The special significance of the inscribed copper tablets was brought out by B.M. Pande. General principles on how to decipher a script were discussed by Mrs. A Zide. Thapliyal hinted at the possibility of historical seals giving cluests this script. Despite all the heat of the polemics, no consensus could be arrived at.

There was a full session devoted to the scientific techniques in archaeological research. The recent work carried out by Shankar Das and Iyer of the Bhabha Atomic Research Centre, Trombay, using Activation Analysis to characterise potsherds evoked a lot of interest and held great promise. There were papers on ancient copper and iron metallurgy. Bhardwaj emphasised that a lot of work needs to be done on the ancient iron technology. The techniques employed by ancient potters to achieve various ceramic effects were also explained. Important inferences one can derive from statistical study of the flakes and flaking features of the Middle Stone Age were described by Vidula. How a study of ratio of soluble silica, alumina can lead to interesting results, was exemplified by S.B. Lal's work on the implementiferous laterites. The mechanics involved in giving shape to Stone Age tools was explained by R.K. Pant. Such studies, it is hoped, will lead to greater emphasis on scientific studies of fabrication and function of tools, rather than mere typology. In a paper by Margbandhu the technology of ancient vehicles was described. Possehl elaborated the new technique employed by him in extracting maximum information out of scientifically planned surface explorations. The possibility of using Activation Analysis on hair-remains to determine the dietary patterns of the past evoked great excitement. The C-14 Lab. members explained the various types of errors involved in radiocarbon dating: statistical due to contamination, thinness of soil-cover, etc. The various procedures adopted to eliminate removable errors were also discussed.

The last session was devoted to synthesising the available archeological data. Synthetic reviews of the chalcolithic and Harappan cultures were given by Dhavalikar and Thapar. F.R. Allchin summarised the southern neolithic data and gave some reconstructions. How faunal remains can help archaeological reconstructions was very ably explained by Alur. Similarly, Vishnu Mitre explained the role of Palaeobotany in archaeology

The opening talk of this session by Romila Thapar, was very thought provoking. A situation where the historian formulates the questions and the archaeologist looks for the data to answer them could lead to significant progress towards reconstructing the socio-economic history of the prehistoric period. Malik's stimulating paper on the social relevance of models gave a scholarly review of what has been done so far and what needs to be done towards model-making in India. Gupta's introductory paper on models lucidly explained the term 'model' and various types of model in vogue.

Perhaps more important were the discussions in the various panels. In the Pleistocene panel led by V.N. Mishra, the discussions were concentrated upon the Plio-Pleistocene boundary, pluvio-glacial correlations, etc. There was heated discussion on the dating of Pleistocene sediments/industries. Khan's estimates of 1,20,000 to 60,000 B.P. for the Middle Pleistocene sediments of Narbada were challenged as being based on guesswork rather than on solid scientific evidence. It was pointed out that a number of C-14 dates have now shown that the Middle Stone Age is not older than 30,000 B.P., atleast in Maharashtra.

In the panel on *Protohistoric chronological lacunae* led by S.P. Gupta, special emphasis was put on the study of such nebulous cultures as the Savaldah and the Kurnool. It was emphasised that the devolution of the Harappa Culture, eastern India, megaliths, the second millennium cultures of Punjab, etc., need to be dated urgently to fill in the chronological lacunae. The discussions in this panel also helped the C-14 Lab. to organise its sampling plans for the '70s

Detailed discussions in the panel, led by H.D. Sankalia, on *Basis and terminology of Periodisation* helped to reach a fair degree of consensus on the definition of phases, periods, etc. The use of the term "Upper Palaeolithic" evoked much controversy. There were many speakers like A. Ghosh, Sinha and Gupta who pleaded to drop the term 'protohistory'. But in the absence of unanimity, no decision could be taken.

The discussions in the panel on *Excavation Techniques* led by Thapar were very fruitful. The scope for improving the existing excavation techniques was discussed. Attempts were made to define the hiatus observed in excavated sites. The requirements of archaeological stratigraphy as contrasted to the C-14 sampling were also brought forth. A. Ghosh, M. C. Joshi and N. C Ghosh elucidated the pitfalls of the 'Horizontal' and 'Vertical' excavations.

CONCLUSION

After the A.S.I. Centenary Conference in 1961 and and the National Seminar organised by the Deccan Callege in 1964, it was the first symposium of its kind. Perhaps it was a unique symposium in its scope, character of participation, and in many other ways. Firstly, it made it possible for archaeologists and other scientists to interact with each other in the common goal of archaeological research. The right milieu for such deliberations was provided by the T.I.F.R. The discussions impressed upon both the physical scientists and the archaeologists the need of giving a multidisciplinary orientation to the archaeological studies in the country. Secondly, a high percentage of the participants comprised young and active workers. Thirdly, the symposium provided a broad, critical review of the prehistoric research to-day and a formulation of the outstanding problems. The multidisciplinary dimensions of the work involved were realised and some agreed approaches to tackle the problems emerged. Fourthly, the great impact of C-14 dating in Indian archaeology was assessed and the discussions probably enabled the C-14 lab. to chart out its sampling programme for the coming decade. To sum up, the Symposium was a grand success.

—*Editors*

New Evidence of Hinayana Buddhism in Vidarbha

The antiquity of contacts of Buddhism with the region of Vidarbha can be taken back possibly to the times of Ashoka Maurya in whose dominions the region fell. It is well known that Mahadhamarakshita was sent as a missionary to the region of Maharashtra by the Pataliputra Council which met during the reign of Ashoka.

Even though there is no mention of Ashoka having sent a missionary to the region of Vidarbha as such, the Buddhist contacts with the latter have been more than proved by recent explorations in the region. Mirashi[1] has brought to light an Ashokan edict at Deotek which testifies to the Buddhist contacts with this region.

Subsequently, it appears that Vidarbha asserted its political independence as it is indicated from the data in the *Malavikagnimitram* of Kalidasa. "There are also good grounds to believe that the Mauryan court was divided into two factions, one headed by Pushyamitra, the Commander-in-chief, and the other by the Minister who managed to make their sons respectively governors of Vidisa and Vidarbha."[2]

However, inspite of Vidarbha slipping out of Mauryan control and passing into the hands of the Sungas, it appears that, as at Bharhut and Sanchi, Buddhism continued to flourish in Vidarbha fairly on a large scale as has been recently proved by the excavations at Pauni, Distt. Bhandara, in the Vidarbha region. Here have been brought to light the remains of a very flourishing Hinayana Buddhist establishment going back to late Mauryan and early Sunga period. This establishment seems to have been quite massive as has been proved by the *stupas* exposed in the excavations and the remains of possible brick-built monastery in the regions adjacent to these *stupas*.[3]

The two *stupas*—one at the Jagannath, a mound at Pauni, and the other in Chandkapura about a mile due south of Pauni—have brought to light the fact that an extensive and well organised Hinayana establishment was in a flourishing condition

Apart from the constructional and architectural features of these *stupas* one remarkable aspect of this Buddhist establishment was the enormous support it seems to have obtained from the common people. Scores of inscriptions associated with the *stupa* of the Jagannatha mound attest to the fact that ordinary people gave gifts to the *stupa* and also carried out minor repairs to the railing and the gateway. There is no mention of any king or any other royalty in these scores of inscriptions. People mostly from the merchant community seem to have donated towards the upkeep of the *stupa*. From the personal names of the donors like Agideva, Pusaguta, Budhaguta, etc., it appears that these people, along with the active lay followers (*pavajita*) came mostly from

the trading or the *vaisya* community.

It is apparent that such a magnificent centre patronised on a grand scale by the trading community must have attracted a large community of *bhikkus* from different parts of Vidarbha and elsewhere. It is also logical to hold that some of the *bhikkus* who could not be accommodated in the Pauni monastery, or who preferred to stay a bit away from the *Samgha* at least during *vassa* (rainy season) were provided for in the rock-cut caves nearby.

However, corroboration in the form of rock-cut caves near Pauni was not forthcoming. It was reported that some rock-cut caves could be had in the Chandala forest about ten miles due north of Pauni as the crow flies. Explorations done in the area have corroborated the presumption as the explorations carried out last year have brought to light rock-cut caves with inscriptions going back to about the 2nd cent. B. C., i e. contemporary with the Sunga phase of the Pauni *stupa* when the latter was embellished by elaborate railing with sculptures and massive gateways at the cardinal locations.

The proximity of the caves to Pauni at once suggests that these Chandala caves and Pauni possibly lay on the same ancient trade route which connected these both with Mandhala nearby which is stated to have some early Buddhist remains.

The caves in question are located about six miles from the village of Mandhala about forty miles due east of Nagpur. As for the architectural features of the caves nothing can be said at present as they are shut off due to rock fall. But just to the right, as one approaches the entrance, are intact rock faces over which are inscribed records, one longer and in two lines, the other short and of one word only. The latter does not appear to have been *in situ* as the boulder over which the record has been inscribed has titled so much that one has to read the inscription vertically.

The first record on the rock face close to the entrance of the cave is intact save the beginning portion of the first line ..

...sa Vandalaka putasa
Apalasa matikamam

Taking into consideration the palaeography of the letters '*va*,' '*sa*' '*a*' and '*ma*', the record may be assigned to c. 2nd cent. B. C. It is reminiscent of the Visamita record from Pauni of the same period. The letters are deeply inscribed, thin, and rounded in form. The meaning of the record can be stated as "... (the cave is) the work of Apala, the son of Vandalaka..." The initial letters of the first line are missing; only "*sa*" indicative of genitive is extant. The word when extant could have been

qualificatory of Vandalalaka. The meaning of the second line is not clear. The word '*matikamam*' is rather puzzling. Could it be '*svamatikarmam*' "act of his own thinking"?

The other record is of three words which runs "*Okiyasa*", i.e., '(the gift of) Aukika.' Aukika indicates the name of a person. The palaeography resembles that of the first record. As such both these records seem to be contemporary.

These records, which can be assigned to 2nd cent. B. C., help us in dating the cave to the same period and point to the fact that contemporary with the most flourishing state of the Pauni Hinayana settlement there also came into effect the activity of rock-cut excavations of caves for the Buddhist monks. These are so far the earliest caves with inscriptions in the Vidarbha region.

On the strength of the evidence in the excavations at Pauni and the exploration of the rock-cut caves in the Chandala forest[4] it may be stated that the Vidarbha region came under the impact of Hinayana Buddhists in the Maurya-Sunga period.

The association of Vidarbha region with Buddhism seems to have continued even in post-Sunga period. The Pauni establishment seems to have continued in Satavahana-Kshatrapa period as well, as the epigraphical and numismatic evidence available there suggests. However, even after this, Buddhism seems to have had some hold over the Vidarbha region. This is attested by the Buddhist caves at Bhandak, which, on account of their having the Buddha image, can be assigned to the Mahayana school.

The find of the rock-cut caves in the Chandala forest near Mandhal, not far from Nagpur, has thus added a new chapter in the history of the spread of Hinayana Buddhism in the Vidarbha region.

S. B. Deo

NOTES

1. Mirashi, V. V., *CII*, Vol. VI, No. 1
2. *The Age of Imperial Unity*, (Bombay, 1960), p. 92.
3. Deo, S.B. and Joshi, J.P., *Excavations at Pauni*, (Nagpur, 1972)
4. See Pl. 1.

Sabz-Burj : An Early Mughal Tomb

INTRODUCTION

To the west of Humayun's Tomb near Bu-Halima's garden, right on the Mathura Road (New Delhi), stands a lofty and heavy structure called Sabz-Burj (green tower). The building (pl. I), which is a tomb, derives its name from its tower-like appearance and the coloured tiles used on its exterior (especially the dome). Although it is in a fair state of preservation, much of its painted cut-plaster work and colourful tiled decoration have peeled off. Nevertheless, it is possible to visualize the richness of its orginal ornate character with the help of extant patches of paintings and enamel work. Structurally, the Sabz-Burj presents many interesting features connected with the early phase of the Mughal architecture. It appears that this monument was never studied properly, in spite of its conspicuous location; nor has it been dated in precise terms. Zafar Hasan,[1] who made a detailed study of almost all the monuments of Delhi, refers to it merely as a Mughal building without even mentioning its outstanding traits. In the present paper, we propose to discuss the architectural character of this building in relation to the growth of the Mughal building art.

DESCRIPTION

Built of dressed rubble and brick set in lime mortar respectively in its lower and upper stages of construction, the Sabz-Burj bears a domed superstructure coated with stucco plaster and embellished with glazed tiles of various colours and painted stencilled-designs. It stands on a low octagonal platform, and, perhaps, originally had a walled enclosure around it. On plan, the Sabz-Burj is an irregular octagon (*muthamman-i-Baghdadi*)[2] of four long and four short sides with a square mortuary chamber (fig. 1). Each of the four exterior sides (facing cardinal directions) of the tomb has within a frame an emphatic arch of Tudor type (four-centred) which contains in its interior a rectangular doorway superimposed by an arched-opening. The short sides of the building are also stressed with tall alcoves which are half octagon on plan except at the south-eastern angle to accommodate flight steps leading to the top. Inside these alcoves can be observed traces of intricate arabesque and geometric designs in brilliant colours as cut-plaster work (pl. II). The bosses on the spandrels, which are of circular form, were encrusted originally with thick tiled decoration, including sacred writings. The interior, comprising a single (8 m. square) chamber with the base of a grave in the centre, has a vaulted ceiling resting on arched walls and usual type of squinches. The dominating aspect of its elevation is, however, represented by the upper dome rising from a high circular drum with faintly tapering sides. The dome itself simulates a

broad-based cone with an inverted lotus at the top. Traces of thick tile decoration are still visible on the dome and drum. The extant patches of glazed tiles contain decorative designs like foliated-oblongs and cruciforms in green and blue colours on a creamish base. Unlike the lower part of the structure, its dome and drum are built of relatively thin bricks of different sizes, which although not very well finished, look like the precursors of the *lakhori* bricks, so commonly used in the Mughal buildings. However, it is the interior of the upper dome which preserves certain interesting marks in it indicating the technique of construction. The unfinished soffit surfaces of the dome and drum bear the traces of cross-walls showing a wheel-shaped plan with eight spokes which formed eight distinct compartments to support the domical superstructure while under construction. The cross-walls were topped towards the apex of the dome by wooden planks (pl. III). An almost intact and another damaged wooden beam can be still seen fixed on the underside of the dome. The cross-walls were dismantled after the construction of the dome was over, but the marks left by them on the wall-surface were perhaps never plastered. The whole evidence thus provides an exact idea of the mode of centring for the construction of a dome during the Mughal period.

DISCUSSION

It would thus be seen that the Sabz-Burj is a significant monument in many respects. Strictly, it has no pre-Mughal Indo-Islamic feature except the inverted lotus at the top, for, there are no *guldastas*, *chhajjas*, or *chhatris*, although the presence of kiosks or *chhatris* around the dome must have added considerable grace to the composition. The tall drum and conical dome with a broad base suggest some sort of an affinity between this tomb and certain Timurid monuments (e.g. tomb of Shirin-Biqa Aqa, dated 1385), and this feature of the crowning component can also be regarded as a remote ancestor of the Shahjahani and later Mughal domes. Similarly, the irregular octagonal plan and corresponding elevation with alcoves on all external sides indicates the genetic form of more complicated Mughal structures conceived as *Baghdadi octagon* like the tomb of Humayun and the Taj. Thr planners of the Sabz-Burj were probably guided by one main objective, that is to have a towering verticality for a medium-sized building. And the only way to achieve this end was to have a double dome which necessitated the employment of multiple arches and alcoves in the walls for a proper distribution of weight and the use of irregular octagonal design to bind the angles of the inner square chamber with greater firmness. The use of brick in the construction of upper drum and dome was also perhaps done for lessening the weight of the superstucture, for, the builders had no experience of raising double domes of stone on such a structure.[3]

DATE

The only other building similar to the Sabz-Burj in design and constrution is Nila-Gumbad, a tomb, located close by to the south-east of Humayun's

tomb. Most of the modern scholars have dated the Nila-Gumbad to the period of Jahangir following Sayyid Ahmad Khan; but a closer examination of its extant enclosure wall (fig. 2), which was utilized without changing much of its structural character to serve as a part of the compound wall of Humayun's tomb, shows that the former (Nila-Gumbad) is of an earlier date than the tomb of Humayun.[4] The decorative elements of Sabz-Burj and Nila-Gumbad illustrate occurrence of colour ornamentation executed through glazed tiles, cut plaster work and ordinary paintings and a total absence of stone carvings or marble inlay and red sandstone veneer[5] the characteristic features of the early Mughal building art. The conspicuous pre-Mughal Indo-Islamic characteristics are, however, absent in both of them. Yet, in respect of structural manipulation, the Nila-Gumbad has certain improvements over Sabz-Burj especially in its balanced elevation with a proportionate drum and more carefully built staircase maintaining the symmetrical arrangement of alcoves on the exterior. Hence, the Nila-Gumbad appears to be of a later date than the Sabz-Burj; even if the former was built immediately before the tomb of Humayun was planned, the latter must have been raised somewhat earlier to that. As it was impossible to think of the construction of such buildings of pure Mughal character during the period of Humayun's exile (1538-55), the Sabz Burj seems to have been built within the first phase of Humayun's reign in India, i e., between 1530 and 1538 A.D.

M. C. Joshi

NOTES

1. *List of Muhammadan and Hindu Monuments* (Delhi Province), II (Calcutta, 1919). p. 139.

2. The earliest appearance of the irregular octagonal design amongst the Indo-Islamic monuments can be noticed in the lofty tower of the Bijai-Mandal (Tughlaq period) within the city of Jahanpanah, Delhi. But, as a regular structural plan the octagon of four long and four short sides was mainly used by the Mughals.

3. The earliest Mughal tomb with stone built upper and lower domes is probably the Afsarwala Gumbad in Delhi dated about 1566-67.

4. Naqvi, S. A. A. *Delhi Humayun's tomb and adjacent buildings* (Calcutta, 1947), p. 13.

5. The use of red sandstone with or without marble strips as encasing material is a feature of some Mamluk and Khalji and a few Tughlaq monuments, but in most of late Sultnate buildings the employment of thick plaster over the rubble walls attained greater popularity. The Mughals, who were only familiar with the glazed ornamentation, seem to have started finishing their buildings with red sandstone veneer with or without mosaic patterns not before Humayun returned from Iran in 1556. The red sandstone facing on the gates of Purana Qila, Sher-Mandal and Qala-i-Kuhna mosque there, therefore, appears to be a work of the last days of Humayun or of the early period of Akbar.

A Terracotta Medallion from Shahabad, District Hardoi, U.P.

The author has recently discovered a terracotta medallion on an ancient mound, called Angai Khera, in the Shahabad Tehsil of District Hardoi, U.P. The grey coloured medallion of very fine and well fired clay is about 9 cm. in diameter. The obverse depicts a beautiful composition of an animal overpowered by a male figure. The reverse depicts *triratna* symbol alternating with *srivatsa* symbol with a stylized conical foliage (plant ?) between them. Since, to me, the scene depicts a passage in the Kalidasa's *Abhijnan Sakuntalam* (Act VII, between verses 14th and 15th) which runs like....................(*jimbha singha de ganaissam*... .) I feel, the medallion in question, which may stylistically be placed in the 1st century B.C., indirectly places our great poet Kalidasa a century before Christ and not four to five centuries after, as is often held. I, therefore, decided to publish it primarily for the benefit of the scholars interested in Kalidasa's chronology.

The scene on the obverse depicts a lion–cub with anklets or *payal*, a typical ornament of feet worn by women folk in U.P. The head of the animal is turned backwards, an effort in which the left fore-leg is raised to the back. The tail is shown entering between the two hind-legs and coming out from over the left hind-leg and falling at the back, below a tree. The mouth is wide open with a series of teeth on the two jaws. The jaws are held by a young male figure in a small *kaupina* type *kachha dhoti*, usually worn by children in the villages of Uttar Pradesh.

The head is covered with a small piece of cloth with simple folds ending in a small knot at the right forehead. To depict the action in combat and emphasize the strength required to open the mouth of the lion-cub, the child is shown kneeling on his left leg kept on the raised back of the animal. I feel that the young male figure is that of child Bharat engaged in counting the teeth of his pet lion-cub. That the cub was domesticated and pet is amply clear from the leg ornament that it wears.

The symbols on the reverse are often seen associated with Buddhism and Jainism (*Triratna*) and Vaishnavism (*Srivatsa*), but, to me, as early as the 2nd Century B.C. they had become *mangalika* or auspicious symbols used by all. One can see them on the top of the *toranas* in the Udayagiri caves of Kharavela (Orissa) of the 2nd Century B.C. although the king Kharavela was a Jain. It may be significant to mention that a scene depicted in cave No. 1 at Udayagiri has also been considered by Mrs. D. Mitra faintly reminiscent of the story of Dushyanta's first meeting with Shakuntala embodied in Kalidasa's *Abhijnan Sakuntalam*. A somewhat similar plaque (No. 17) has been reported by Marshall from Bhita and is published in the Annual Report of the Archaeological Survey of India for the year 1911-12, (Pl XXIV).

I am, therefore, of the opinion that the present medallion has added one more positive evidence to date back Kalidasa to the 1st Century B.C. It may be recalled that on several other grounds eminent historians like Rajabali Pande, K. C. Chattopadhyaya, C. V. Vaidya, L. R. Singh, C. S. Pandeya and C. Sivaramamurti have came to more or less the same conclusion.

Jagdish Gupta

[Since the interpretation and dating of the object are extremely controversial we are giving another view also. While Sivaramamurti places it in the 2nd cent B.C. Nihar Ranjan Ray places it in the 5th cent A.D.]

The terracotta medallion in question from District Hardoi showing a male fighting with an animal is no doubt an interesting specimen of the common man's art, but it can hardly serve as a decisive factor in regard to the date of Kalidasa because the identification of the scene as 'Bharata counting the teeth of lion-cub' is not beyond doubt. On stylistic considerations it appears to be the product of the 3rd century A. D. and not 1st century B.C. for which the reasons are as under :

(i) The animal figure, which does not represent a lion-cub, is the figure of a composite animal to be classed as a *vyala* with the head of *makara* and body of a lion On close observation one can easily detect the elongated neck and mouth of the beast The hind-portion, of course, is of a lion. Such fanciful mythical creatures commonly occur in Indian art. invariably as art motifs. The anklets worn by this animal in the depiction in question are not indicative of its domestication, but represent only conventional ornamentation of the *vyala* as can be seen on the *vyala* figures at Khajuraho, Konark. and Bhaktapur (Nepal). The continuation of such motifs at a later date can be seen in the temples of the large *vyala* statues facing male figures.

(ii) The male figure can hardly be of a child as there is no distinct trait to that effect. On the other hand, it has definite resemblance to a grown-up man, especially notable in the large conventional eyes. The tight-fitting cap on his head appears to be of Saka-Kushana derivation.

(iii) The treatment of the animal and human figures in the medallion, especially of the body curvature, movement and modelling, suggests a developed stage of terracotta art, much advanced than that depicted in the the Sunga period.

(iv) The *mangalya lanchchhanas* on the reverse of the plaque are similar to those depicted on the images and tribal coins of 2nd-3rd centuries A.D.

M. C. Joshi

BOOK REVIEWS

THE YADAVAS AND THEIR TIMES

(published by Vidarbha Samshodhan Mandal, Nagpur, 1970)

pp. 404 and XVIII plates, price Rs. 45/-

by O. P. Verma

The book under review presents a comprehensive account of the history of the Yadavas of Devagiri in one compact volume. The once mighty Yadavas of Devagiri who dominated the political scene in the Deccan for full two hundred years have received scant justice at the hands of historians so far. The origin of the Yadavas lies shrouded in the tangled web of myths, fables and legends, and these are summarised in the first few pages. The author then deals with Dridhaprahara who flourished in the last quarter of the 9th century, and ends his narrative with Harapaladeva in the first quarter of the 14th Century, when he was defeated by Mubarak Khan (later known as Qutubuddin Mubarak Shah). Thus were stamped out the Yadavas of Devagiri from the political map of India.

For the reconstruction of the political history of the Yadavas, the author has subjected to investigation the records of the Chalukyas, the later Chalukyas, the Kakatiyas, the Hoysalas, the Cholas, the Silaharas, the Paramaras, the writings of the Muslim chroniclers and the various secondary sources. In all, there are eight chapters of which first four are devoted to the political history. The remaining four chapters, covering some 203 pages, deal with the Administration, Social and Economic conditions, Religious conditions and the Art and Architecture. All of them contain much interesting and valuable information. The chapter describing the social life of the times of the Yadavas particularly contains a good account of the position of different sections of people, their domestic life, popular belief and superstitions, customs and manners and facilities for higher education.

There are two useful appendices, one giving the genealogy of the Yadavas of Devagiri and the other containing an up-to date list of the four hundred and odd inscriptions of the Yadavas. The book also contains a map showing the extent of the Yadava Empire. The eighteen plates showing Yadava coins, forts and temples are useful although the quality of their production is extremely low.

The book under review, is quite useful although it could have been better printed with fewer mistakes than one comes accross while reading it.

A. B. C.



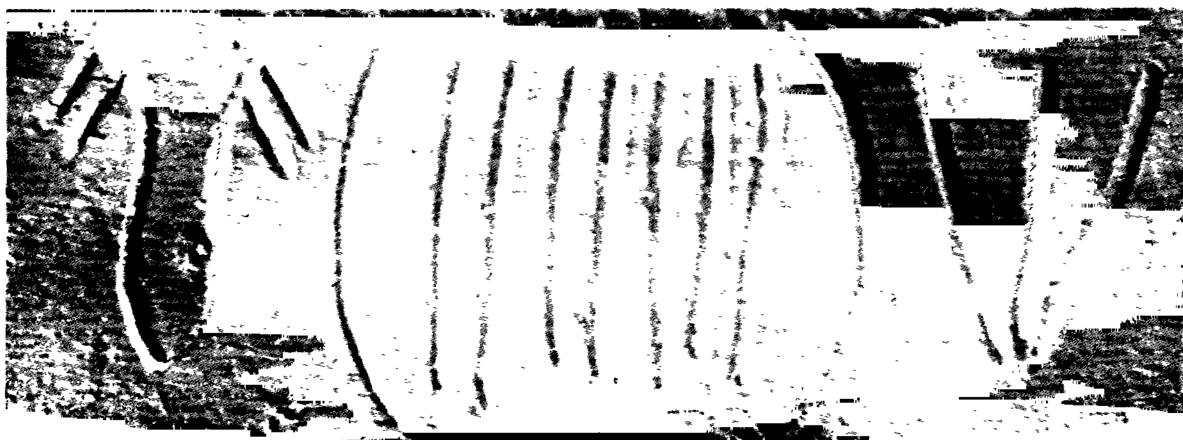
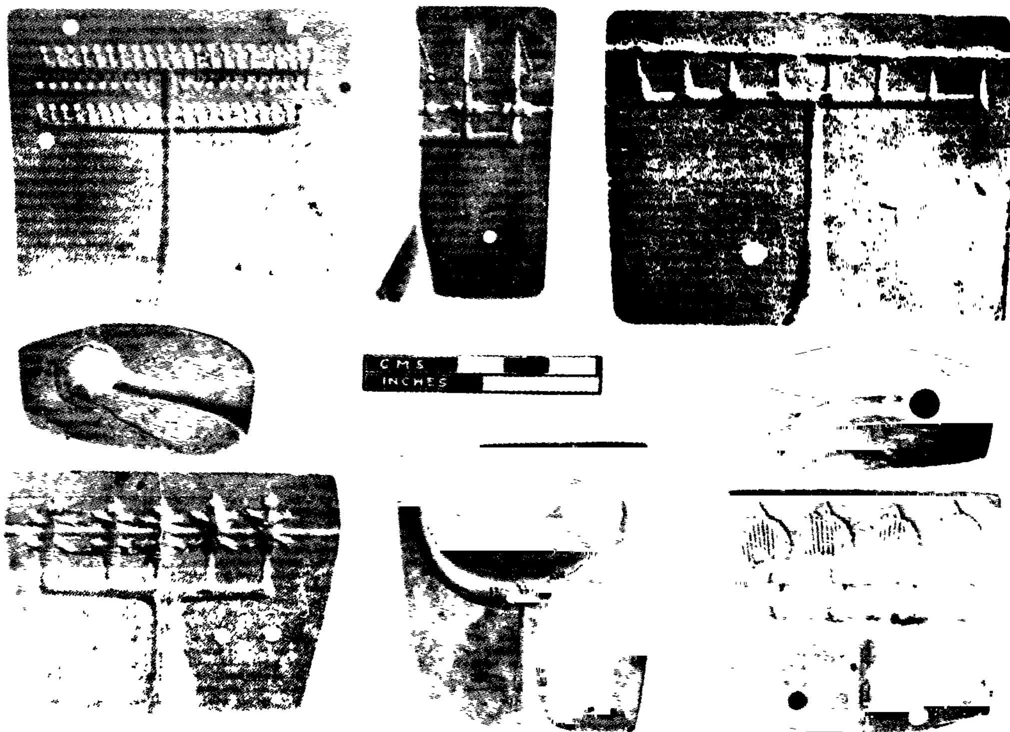






Plate I ; Chandigarh, Inscribed potsherds with Harappan characters engraved before firing (top ins. Nos. 3 and 4 ; middle—ins. No. 2 ; bottom, ins. No. 1, see p.52)







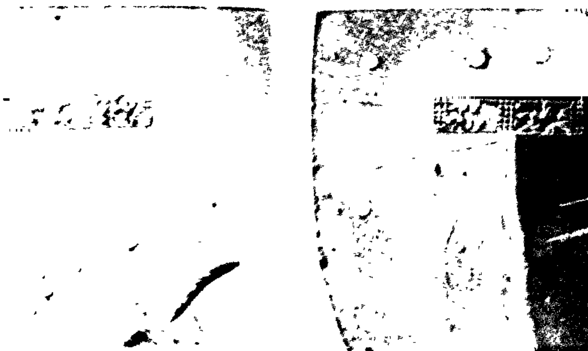




Plate II : Champa, (a) and (b) Stone moulds (*see Fig. 2b on p 72*), (c) *Terracotta Female Figurine*
(*see Fig. 5 on p.73*)

(*a*)



(*b*)



(*c*)

Plate III · (a) Champa, Ivory figurines (see Fig. 1 on p. 71).









Plate IV : Champa, (a) Terracotta nagin figure (see Fig. 4 on p. 73) (b) Toy-cart of tortoise shell (see Fig.3 on p.73) (c) Gajjalkonda, Stone human-faced mask (see p.74) (d) Stucco figure of Jambhala (see p.77)





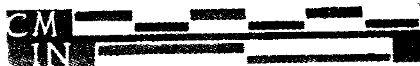


Plate V : (a) Shahbad, Terracotta Medalion (see p.90)
(b) An iscribed rock-cut cave in Chandala forest, near Nagpur (see p.85)



Plate VI (a) : Piprahwa. Mud stupa in the foreground with square stupa and niches above (see p. 63)

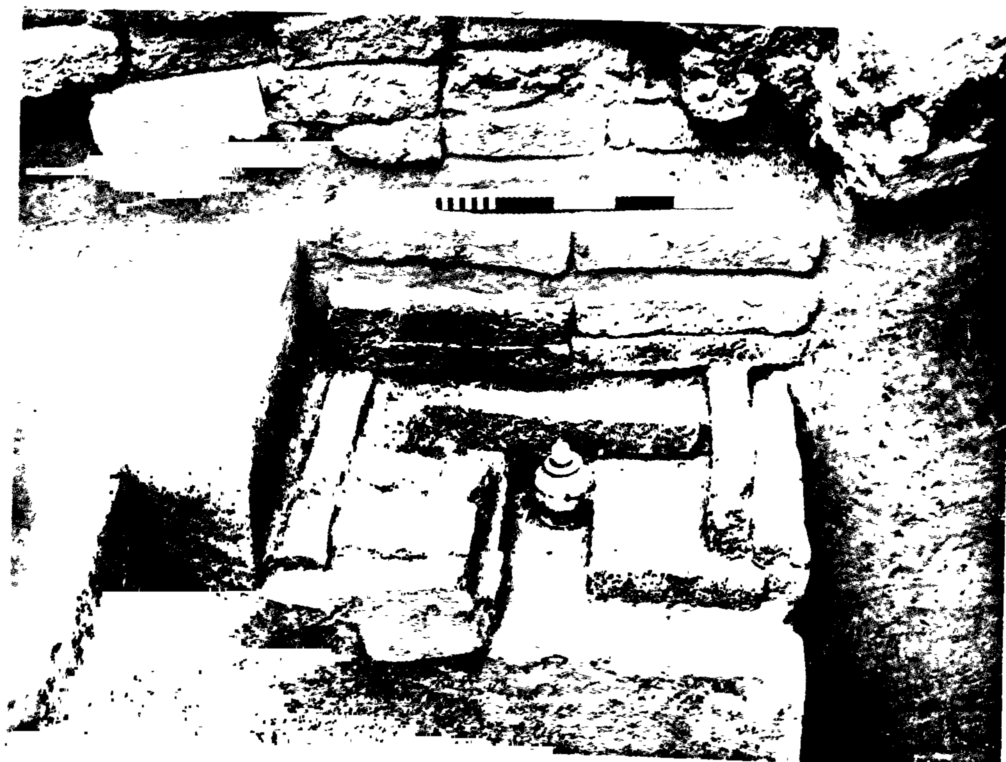
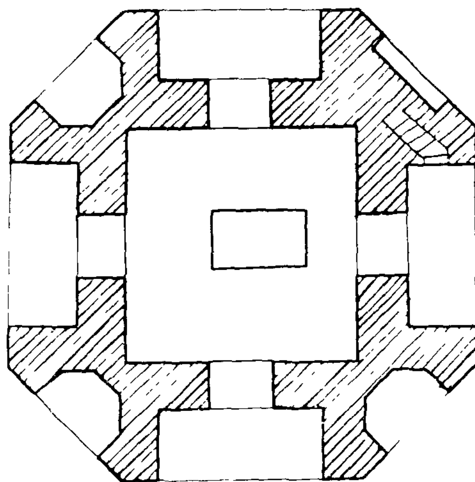


Plate VI (b) : Relic Casket (seepl,63)



Plate VII : (a) New Delhi, Subz-Burj tomb (see pl.I on p 87)

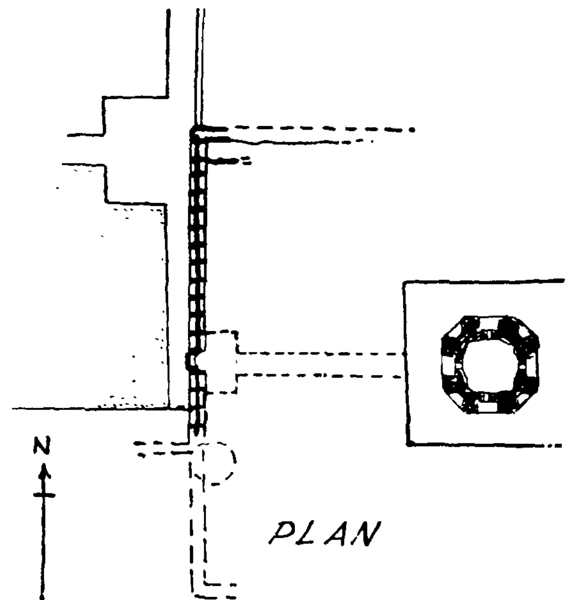
PLAN



N

SABZ BURJ

METRES



COMPOUND WALL OF HUMAYU
TOMB AND NILA GUMBAD

Plate VII : (b) Ground Plan of Nila Gumbada (see Fig.1, on p.87)

Plate VIII : New Delhi, (a) Decorated alcoves of Subz-Burj tomb (see pl. II on p.87)

(b) Wooden planks of the dome (see pl. III on p.88)

SOME ASPECTS OF PREHISTORIC TECHNOLOGY IN INDIA

(Indian National Science Academy, New Delhi, 1970) Price : Rs. 10.
vi+70 pp., and 16 figures.

by Prof. H. D. Sankalia

The history of material progress of Man is the history of directional changes in technology. It is absolutely true, at least in the life of the preliterate man. All over the world, archaeologists are trying to work out this aspect of man's past in great details. In our country, however, no concerted effort has yet been made to study the prehistoric technology in all the aspects it deserves. But sporadic efforts have been made. It was a long-felt need to bring all the results arrived at so far under a single cover so that future planning may be formulated on a sound basis. It has also been constantly felt that the students of Indian prehistory (i.e., the period before 500 B.C.) do not know systematically as to what has been done so far and what remains to be done. Although sketchy, this monograph of Prof. Sankalia is a commendable effort in this direction. It deals with all the important techniques of making stone tools, pottery, terracottas, sculptures, stone-vessels, beads, copper-bronze implements, bone and ivory objects, building techniques, weights, textiles, agriculture, medicine and surgery. The monograph is recommended as a text book in the college and university departments of archaeology, ancient history, culture, and anthropology.

S. P. G.

THE MEGALITHIC CULTURE IN SOUTH INDIA

(Prasaranga, University of Mysore, Mysore, 1972) Price : Rs. 40.
390, pp. 22 figures and 32 plates.

by B. K. Gururaja Rao

This doctoral thesis is a welcome addition to the subject. In the first few chapters the long-felt need for a survey of megaliths of the several regions in south India has been fulfilled in a befitting manner. The latter part of the book is devoted to the analyses of burial furnishings, skeletal remains and other cognate matters. This portion also has been presented in a systematic way. The author deserves praise for the clever presentation of evidence in the chapter on chronology. However, one may not agree with some of his postulates, viz., spread of white-painted black-and-red ware into the south, introduction of irrigation-based agriculture by the megalithic folk,

active participation of the megalithic people in the process of urbanization of south India, etc. Structural vestiges of these people represented by the beggarly post-holes indicating huts of perishable material would certainly dissociate any 'urban bias' among these folk. It is indeed an enigma that a people who could construct such huge stone-tombs and practice elaborate burial rituals could not conceive better residences. The author derives the south Indian megaliths from the cairn-burials of north-west India, indicating thereby an overland diffusion. This theory was earlier put forword by Dr. N. R. Banerjee. In that process he assumes that they adopted the black-and-red ware. This is not convincing, for the black-and-red ware is a product of a technique and should not be associated with any particular people, and secondly, a maritime dispersal of the megaliths is totally discounted. The rock-cut caves of Kerala and the Passage-graves of north-Karnataka belie the author's premise. Again, associating the different types of megaliths with various strata of people in the society professing varying eschatological beliefs appears to be rather conjectural. Further, the author's equation of the megalith-builders with the Dravidians is a moot point. However, despite these controversial points the author has succeeded in presenting the varied data methodically and this is commendable.

—K. S. Ramachandran

INDIAN CIVILZATION : THE FIRST PHASE
THE PROBLEMS OF A SOURCEBOOK
(Indian Institute of Advance Study, Simla, 1970), Price Rs. 70
xxii+306 pp.

Edited by S. C. Malik

It is a publication incorporating the proceedings of a workshop seminar on "Sourcebook of Ancient Indian and Asian Civilization" held for a week in September 1970 under the auspices of Indian Institute of Advance Study, Simla. It contains a general introduction by S. C. Malik which reiterates his well-known point of view about the study of Indian History : the anthropological approach in framing models for understanding the Indian Civilization as a whole. It also contains inaugural address, presidential speech, notes by the delegates, papers by scholars, suggestions of participants, problems, controversies, etc., some of which are quite informative and useful. Unfortunately, many pertinent remarks made by several learned scholars are missing in the book.

It, however, appears that many of us had no idea what a 'workshop seminar' means. To our amusement, some of the papers presented were of the stereotype,

generally been written for other seminars. The participants were actually called upon to discuss and finalize the structure, design, contents, periodization, methodologies, approach, general ideas, perspectives, etc., of the project but comparatively much less time was devoted to these items than expected. Inspite of this, the active participation of some of our old guards like Profs. R. C. Majumdar, D. C. Sircar and B. B. Lal and Shri A. Ghosh made the seminar worth attending since for a real good Sourcebook we need the considered opinion of those who have full grip over the primary sources of our history, both literary and archaeological, and not of those who theorize only on the basis of a few primary sources available in English translations, or secondary sources.

The publication, however, is a very welcome addition to anybody's bookshelf, since it clearly shows 'what to do and what not to do in a workshop seminar.' Unfortunately, it appears that this item of the Fourth/Five Year Plan sanctioned bv the Education Ministry is going to die a natural death. Will there be any 'follow-up action'—that is the question we are often asked. The book has a nice get-up and beautiful printing. It is the first publication of its kind.

—*A Participant*

STUDIES IN WEAPONS AND WARFARE

(Army Educational Stores, New Delhi, 1970) Price : Rs. 95.
304 pp. and several illustrations.

by G. N. Pant

The book which could be more appropriately entitled as 'Indian Weapons and Warfare through the Ages', is an attempt to present a comprehensive survey of Indian weapons, classified in 23 chapters with 59 photographs and 73 line-drawings. It starts from the Stone Age and ends in modern times. It, therefore, includes the classified arms of the Rajput, Maratha and Sikh. Interestingly enough, it also refers to the present tribal weapons. The literary data has also been utilized to make the text amply informative. The book reflects the sound knowledge of the author. But it as too big a span.

In a work of such a vast character there are bound to be many gaps. It does not form a continuous chain of chapters of our history even though the author has tried to do it. It is more descriptive than critical. At places the author has not given his views, e.g., he has elaborately discussed the Copper Hoard implements but without indicating their context and use. The study of warefare is also far from com-

plete. The author, it is hoped, would look into these points as and when he revises his text for the next addition. On the whole it is a monumental woik on a largely neglected subject of Indology.

K. N. Dikshit

BAGH KI GUPHAYEN

(Madhya Pradesh Hindi Grantha Academy, Bhopal, 1971);
76 pp. Plates 62. Price : Rs. 15 (deluxe), Rs. 13 (ordinary).

by Maheshwari Dayal Khare

Whereas there have been a number of publications on Ajanta in the recent past, Bagh caves, with Gupta period wall-paintings and sculptures, have not ben so fortunate. Khare's book fulfils this long-felt need and as a matter of fact heralds a new phase in art history and Hindi writing.

Bagh ki Guphayen is a neatly produced book, printed on Indian art paper. It has five main chapters : I. Introduction ; 2. The caves and their dates ; 3. Sculpture; 4. Paintings, and 5. Conservation. The introduction, besides dealing with the usual information on the situation, discovery and how to reach the caves, etc., briefly describes the development of Indian sculptures, paintings in temples and monasteries, carving of the caves and the artists, etc. as a background material to understand the Bagh caves. The second chapter deals with the nine caves at Bagh. According to Shri Khare these were excavated in the 4th century A.D. The next chapter deals elaborately with the sculptures of these caves, most of which are Buddhist. Cave no. 2 has some classical examples in the images of Buddha, Avalokitesvar, Maitreya, etc. Cave no. 4 shows the two river goddesses, Ganga and Yamuna, near the top of the doorways, which clearly points to their early Gupta character. The fourth chapter deals with the wall-paintings, most of which are either lost or are in a bad shape due to ravages of time. Cave no. 2 shows floral-creeper designs interspersed with elephant, bulls, birds etc. The cave also has the famous Padmapani painting, most of which is now lost and only its face remains. Cave no. 4 is the most important cave for paintings. Some of the famous paintings are : the princess and her maid, two couples, a music scene, a dance scene in a court, a festive procession, etc. Perhaps cave nos. 3 and 7 and the remaining caves also were once painted but paintings are no longer visible except in stray patches. The last chapter briefly describes the conservation measures taken up so far.

Khare has a good command on the language, and his intimate and first-hand knowledge of these caves and their art is well reflected in his writing. Six authentic sketches and ground plans at the end of the book adds to its usefulness. One is, however, disappointed with the plates which lack details and are not as well printed as the text. It would have been still better if at least some of the wall-paintings were reproduced in colour.

V. P. Dwivedi

BIBLIOGRAPHY OF THE HARAPPAN CULTURE

(Field Research Projects, Miami, Florida, 1971) Price : $ 10.

by B. M. Pande and K. S. Ramachandran

The bibliography under review is comprehensive, nicely printed, and possesses the lists of the Harappan sites and the C-14 dates from the Harappan and affilated levels. Though the volume is published in 1971 it takes into consideration some references published in 1970 or even in 1971.

Certain lapses are, however, bound to occur in a work of this kind. To begin with, one misses R.E. Snead's 'Recent Morphological changes along the coast, West Pakistan' in *Annals of the Association of American Geographers*, Vol. 57 no. 3 (1967) pp. 550-565. This paper is significant for the geomorphological studies of the Makran coast and also reports in this area a Harappan site called Khairia Kot, now some miles inland but perhaps once on the sea. *Pakistan Archaeology*, no. 4 (1967) p. 7 refers to a site called Vainival on the right bank of a dried-up course of the Beas, a site missing in the authors' list of the Harappan sites Another missing reference is N. Egami and T. Sono, 'On the Granary Excavated in Telul-Eth-Thalathat', *Actes du VIII Congress International des Sciences Prehistoriques et Protohistoriques*, (Prague, 1970), pp. 127-129, where a granary which may be called a prototype of the granary excavated at Harappa has been dated to the Nineveh V period. *Journal of the Oriental Institute*, Baroda, Vol. 15 (1962) pp. 457-458 has a paper on 'Lothal—a place name' by R.N. Mehta. L.S. Leshnik in p. 302 of his 'Prehistoric Exploration in North Gujarat and parts of Rajasthan', *East and West* (1968) pp. 295-310 doubts the Harappan affiliation of the site of Sujnipur in Gujarat. *Eastern Anthropologist* (1965) contains a review of *Ancient India* nos. 18 and 19 by V.N. Misra who forcefully disputes the suggestion that the Lustrous Red Ware was a transformation of the Harappan element. D.N. Handa's 'Protohistoric Culture Complex of Punjab' in *Vishveshvaranand Indological Journal* (1969) where he refers to 40 mature Harappan sites and 20 late Harappan sites in Punjab is missing and so also is D.D. Kosambi's 'Urvasi

and Pururavas' in *Myth and Reality* (Bombay, 1962) pp. 42-81, where (in p. 71) he discusses ritual significance of the Mohenjo-daro Bath. One may also refer to S.A. Sali, 'The Harappa Culture as Revealed through Surface Explorations in the Central Tapti Basin,' *Journal of the Oriental Institute*, Baroda (1970) pp. 98-101 and K.N. Dikhsit, 'Harappa Culture in Western Uttar Pradesh', *Bulletin of the National Musem*, New Delhi (1970) pp. 21-28. An unnoticed early reference to Harappa is *The Memoirs of Private Wakefield, Soldier in Her Majesty's 32nd Regiment of Foot (Duke of Cornwall's Light Infantry 1842-1857*, edited by A. Swinson and D. Scott (London, 1968). Private Wakefield camped at Harappa on 18th December, 1849 and left behind in his memoirs (pp. 118-119) a short description of the ruins. Mallowan's idea of the date of the Harappan civilization is contained in his *The Early Dynastic period in Mesopotamia* (C.A.H. fascicle, London, 1968) p. 17. Lamberg-Karlovsky's comments on the Harappan date occur in 'The Proto-Elamite settlements at Tepe Yahya', *Iran* Vol. 9 (1971), p. 94. G. Daniel's *The First Civilizations* (1968) and R.E.M. Wheeler's review of the Allchins' '*Birth of Indian Civilization*' in *Antiquity* (1968) pp. 72-73 ought to have been listed. The same may be said about Fairservis' review of the Allchins in *American Anthopologist*, Vol. 72 (1970), pp. 706-708, and R.L. Raikes' first communication on the end of the Indus Civilization in *American Anthropologist* Vol. 65 (1963), pp. 655-659 ("The End of the Ancient cities of the Indus Civilization in Sind and Baluchistan").

As regards the names of the authors, no distinction is made between K.N. Dikshit, sometime Director General of Archaeology in India and K.N. Dikshit of the National Museum, New Delhi. *Krishna* Govinda Goswami should be Kunja Govinda Goswami. *Naini* Gopal Majumdar is obviously Nani Gopal Majumdar. E.J. Ross (Brigadier Ross about whom K.P.S. Menon has something witty to say in *Many Worlds)* in *Journal of the Near Eastern Studies*, Vol. 5 (1946) pp. 284–316 is listed under the entry of Allan Ross.

Considered as a whole, the lapses which have been pointed out, are minor and may be taken care of in any future supplementary volume. Meanwhile, the authors, B.M. Pande and K.S. Ramachandran, and the editor, Henry Field, have put the student of the Harappan civilization greatly in their debt. *The Roots of Ancient India* (New York, 1971) by W.A. Fairservis and the Appendix by S. P. Gupta, 'the dichotomy of Harappan and pre-Harappan Cultures' in Omi Manchanda's book *A study of Harappan Pottery* (Delhi, 1972) may also be added to this list.

Dilip K. Chakrabarti

THE HATHIGUMPHA INSCRIPTION OF KHARAVELA AND THE BHABRU EDICT OF ASOKA—A CRITICAL STUDY

(Prints India, 3643, Mori Gate Delhi-6)

xvi, 111 pp., 18 Illustrations and two maps, : Price Rs. 30.

by **Shashi** Kant

Dr. Sashi Kant has critically studied the Hathigumpha Inscription of Kharavela and the Bhabru Edict of Asoka. The latter is as significant for the history of Buddhism as the former is for Jainism. The Hathigumpha Inscription is indeed an unrivalled historical document providing authentic account of the principal events of the reign of king Kharavela, meticulously recorded year-wise. It not only chronicles the military exploits of Kharavela but also records his grand projects of public works including repairs and conservation of the buildings and fort-walls of the capital, the construction of a new palace and, what is more important, the diversion of an historical canal, furnishing details of the expenditure incurred on each project.

Although one may not agree all that Dr. Sashi Kant says about the chronology of Kharavela, his interpretation of the unique record is highly critical, refreshing and sparkles with originality and his reconstruction of the social, cultural and religious life from the data furnished by the epigraph is indeed brilliant. His interpretation of the Bhabru Edict of Asoka also breaks new ground and provides a scintilating approach to a difficult and knotty epigraph. The book is indeed very well written and documented and marks a valuable contribution to Indological studies. It will be useful as a work of reference to all students of Indian history and serious researchers in Indology.

Krishna Deva

BHARTIYA PRAGITHASA

(Paramjyoti Prakasan, Varanasi-Allahabad, 1970)

168 pp. with 120 line drawings, Price: Rs. 25/- Library edition, Rs. 22/- Student edition.

by R. K. Verma

Dr. Verma deserves our thanks to pick up courage to write on a highly technical subject like the Indian prehistory in Hindi. The book starts with the geological background and explains in successive chapters the problem of terminology, tool manufacturing techniques and detailed description of tool types prevalent in India, from lower Palaeolithic to Neolithic times. The last chapter deals with relative and

absolute dating methods. It also includes Hindi equivalents of English terms and *vice versa.*

The book has been written primarily for students of Prehistoric Archaeology in Indian Universities. Its approach is simple and direct, and its style is that of a text-book. To that extent, it is quite a useful book. It is a publication that has been nicely printed and produced.

S. P. G.

THE PALAEOGRAPHY OF BRAHMI SCRIPT IN NORTH INDIA
(from c. 236 B.C. to c. 200 A.D.)
(Siddhartha Prakashan, Varanasi-5, 1971)
137 pp. with several illustrations, Price : Rs. 50.

by T. P. Verma

In dealing with the subject of Brahmi script Dr. Verma has somehow followed the line adopted by Prof. A.H. Dani. Thus Dr. Verma has taken into account cultural factors as the main factors affecting the changes in Brahmi. His book has been couched in the most technical language and it proves that the author has a good grasp of the subject.

At places one may not agree fully with the interpretation given by Dr. Verma, e.g , on page 7 of his he book speaks of a full-fledged alphabet of the privileged class. However, there has been no evidence to prove that the so called privileged class had a full-fledged alphabet and the passage quoted in support (from *Mudraraksasa*, a post-Mauryan document) could at best prove that the *srotriyas* were not good at writing because they could hardly write in an explicit hand. Again, even if we argue with Dr. Verma that the people in general never possessed the knowledge of reading and writing, then the purpose of the Asokan Edicts which were mostly meant (from internal evidence) for the masses was not to be achieved after the king's desire. Hence we should accept that reading and writing was not that rare an art in those days.

One has all praise for such almost flawless printing and a beautiful get up. A descriptive index alone of such works would have been really useful for students. The precision used in preparing the Bibiography is also considered a great help to the researcher. Similarly a summary of discussions and the conclusions reached in every chapter would have been of immense help.

Brahmadatta

A CONCISE HISTORY OF SCIENCE IN INDIA

(National Commission for the Compilation of History of Sciences in India, New Delhi, 1972),
689 pp. with several illustrations, tables and plates. Price : Rs. 50.00

Editors : B. M. Bose, S. N. Sen
and B. V. Subbarayappa

The editors have taken upon themselves a very interesting but intricate and complex task relating to the historical development of science in India. Until recently it was a neglected subject. The book starts with the survey of source-material and traces the development of different sciences like Astronomy, Mathemetics, Medicine, Chemical Practices, Alchemy, Agriculture, Botony and Zoology. It also includes Views and Concepts on the Physical World and Western Science in India to the end of the 19th Century A.D. It ends with a resume of the whole work. It is further supplemented by an index and upto date bibliography.

The authors have intelligently utilised the concerned archaeological records. The chapters on Chemical practices and Alchemy, Botony and Zoology are of special interest to the students of archaeology. The original literary sources such as the Vedic literature, *Sutras*, *Bhasyas*, *Arthasastra*, *Nitisastra*, Canonical works of Buddhists and Jains, Persian and Arabic records, have been thoroughly tapped. It has been conclusively shown that the Indian science left a creditable impact on the Greek, Chinese and Arabic systems, especially in the fields of medicine, astronomy and mathematics. Dr. Subbarayappa has endeavoured quite successfully in bringing together the various aspects of different chapters while writing the resume.

This monumental work presents the personality of India through its science and technology. However, in the work of such a vast nature there is bound to be some lack of uniformity in the treatment and presentation of the material In the chapter on 'Medicine', no mention is made about *Silajeet* found in the excavations at Mohenjo-daro. The chapter on 'Zoology' has not mentioned the well known mamalian fauna of Pleistocene period in India, while in the chapter on 'agriculture' no reference has been made about the development of agricultural implements in India.

It is hoped that in future editions the book will include in detail some more specialised topics, such as geology and mineralogy, geography, etc , and will also break the barriers of the present limitations. A few of the chapters, after certain modifications and enlargement, are required to be published as independent works for the benefit of students of specialised subjects.

K. N. Dikshit

A STUDY OF THE HARAPPAN POTTERY

(published by Oriental Publishers, Delhi, 1972)
406 pp. with 400 line drawings. Price : Rs. 55.

by Omi Manchanda

Here is a fresh study in the form of a corpus of Harappan and pre-Harappan potteries based on the meterial of the past and recent excavations. The monograph is the Ph. D. thesis of the Deccan College, Poona, and is devided into four chapters. It begins with the general characteristics of the Harappan pottery. The next chapter deals with the pre-Harappan pottery from four sites, viz., Amri, Kot Diji, pre-Harappan Kalibangan and pre-defence Harappa. Chapter III surveys the cultures in Baluchistan region, whereas, the last chapter is exclusively devoted to painted designs and art motifs. The General Editor of the book, Dr. S. P. Gupta, has added an appendix on 'the dichotomy of the Harappan and pre-Harappan cultures. The study brings into focus not only the details of the Harappan pottery types but also throws light on its variants in West Asia going back upto Jamdat-Nasr period. The author keeps Harappa Culture distinct from pre-Harappan cultures.

The book is quite comprehensive but, I feel, it should not have been published in the present form. It has failed to provoke thought on certain positive issues, such as the genesis, flowering and decay of the Harappa culture as may be seen through its pottery. Moreover, the individual chapters have no sub-titles which makes the reading boring, and at places confusing. A number of pottery illustrations are below standard. A major defect is the absence of even one distributional map. The publishers and the author should have taken more interest and care which are essential for a standard publication on such an important subject.

In his foreward, Prof. H.D. Sankalia has rightly stressed that the objective of the work is to make the research workers understand the Harappans' inheritance, and to that extent the work is certainly of great value to all research workers. It is a good reference book.

K. N. Dikshit

Trade Mechanisms in Indus-Mesopotamian Interrelations[1]

(COURTESY JOURNAL OF THE AMERICAN ORIENTAL SOCIETY
Vol. 92, Number 2, April-June 1972, pp. 222-229.)

C. C. Lamberg-Karlovsky

TRADE MAY BE UNDERSTOOD in its widest sense as the reciprocal traffic of materials or goods directed by human agency from one place and/or individual to another. Polyani (1957 : 159) divides the mechanics of trade into four major constituents which provide a suitable framework within which to examine trade: two-sidedness, goods, personnel and carrying. Our emphasis will be upon the first three. Our information on the last for the time period involved, save for the presence of sea-faring, is virtually *nil.* Additionally at least three different processes in long distance trade can be profitably distinguished.

1. *Direct Contact Trade*: face to face contact is established between two different places for the purposes of trade. Goods are traded between places A and B without direct assistance by or relations with intermediary sites. This may include the actual presence of trading colonies established by peoples of place A at site B for the trade of specific materials of standardized value. This type of trade is usually centrally organized and administered by one of the principals involved.

2. *Exchange* : this form in the dissemination of goods differ from the above by lacking a definite organization or standardized value of specific materials. Goods are passed from place to place without specific design or purpose. Thus materials from site A and their arrival at site B represent an arbitrary exchange of merchandise from site to site. It is often difficult to isolate whether an object was brought into a site through exchange or independently produced through stimulus diffusion of a style or functional tool type.

3. *Central Place Trade* : is evident when goods are either produced, or resources present, at a few necessarily central points. Thus site C may be located beyond the spheres of influence of sites A and B and control the means of production and/or resources which are desired by sites A and B Site C, acting as a Central Place, may then either transship materials produced in other centers or export its own materials

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[1]This paper was substantially revised since its presentation in the University of Pennsylvania colloquia on Ancient Trade, Dept. of Ancient History. It has benefitted from the comments of Professors James Muhly, Ake Sjoberg, George Dales, Robert H. Dyson, Jr., J. R. Caldwell and J. Sabloff.

or resources. Alternatively, the resources and/or transshipment of goods may be under the control and direction of peoples from either site A or B residing among the foreigners of site C. In this respect there is Direct Contact Trade between the Central Place (site C) and either A and/or B. The important factor is that the Central Place (C) is of a different culture than either A or B It becomes immediately apparent that the archaeologist must attempt to distinguish whether peoples from sites A or B are physically present, i.e., in the form of a trading colony at the Central Place or whether material remains of A or B are present at C as a result of trade.

Insufficient emphasis has been placed on the economic development of trade in what may have been independent systems or mechanisms Three such systems are described above and diagrammed in Chart I. They appear most profitable as isolated mechanisms in discussing Indus-Mesopotamian relations. It must be recognized, however, that these are not mutually exclusive systems—all three types may be coexistent. The task of the archaeologist is to distinguish which process is involved in any trade mechanism at a given point in time. Because of tbe high cost of transportaticn, long distance trade is mainly restricted to materials and goods which are of great value or produced and/or available in limited areas. The role that trade may have had in generative processes leading *toward* urbanization is unknown. It is unreasonable to dismiss long distance trade on *a priori* grounds as derivative from the growth of urban civilization rather than having perhaps helped bring the latter into existence.

Until recently archaeologists have argued for the predominance of *Direct Contact Trade* between the Indus and Mesopotamia, either by sea (Oppenheim 1954) or by land (Mallowan 1965).

DIRECT CONTACT TRADE

Direct contact between traders or colonies within the Indus and Mesopotamia cannot be supported or negated by the archaeological evidence. Clearly a handful of seals (Gadd 1932; Wheeler 1968), etched carnelian beds (Wheeler 1968; Dikshit 1949), terracotta statues and dice (Dales 1968) in Mesopotamia cannot be used as concrete evidence to support the presence of Indus traders in Mesopotamia. Coversely, the presence of perforated, knobbed and 'reserve slip' ware (Delougaz 1952), spiral and animal headed pins (Piggott 1948) or segmented heads (Wheeler 1968) cannot support the evidence of Mesopotamia in the Indus.

Direct Contact Trade through the presence of Assyrian trading colonies at the Anatolian sites of Hattush (Bittel 1970) and Kultepe (Ozguc 1962) have been concrete examples derived from excavations of this type of trade. At both sites the excavators

argued for distinctive activity areas inhabited by foreign trading colonists set apart from the living quarters of the indigenous inhabitants. It is instructive to see the evidence which suggested this situation to the excavators. The intrusive nature of the colonists was not obtained by identifying the distinctive nature of their architecture or ceramics. which were similar to those of the indigenous inhabitants. At both the karum of Kultepe and Hattush the presence of the colonies were indicated by the presence of cylinder seal impressions and textual data. Thus at Kultepe the excavator admits, "If the tablets and their sealed envelopes had not been found, in fact, we might never have suspected the existence of a merchant colony." (Ozguc 1962). At Hattush of sixty-three Old Assyrian documents, sixty were found in the residential quarters of the colony and "These documents contain only Assyrian names no native ones. The impression of cvlinder seals on the envelopes show, without exception Mesopotamian non-Anatolian motifs "

On analogy, the principle evidence for Direct Contact Trade between Mesopotamia and the Indus should be seen in the seals, sealing impressions and textual data of one culture found in another. No surprise, for, if Indus traders were in Mesopotamia, or the reverse, one would expect them to seal goods shipped back by their own seals. Three points become immediately evident:

1. No Mesopotamian seals, sealings or texts have ever been found in Harappan context.

2. Only one Indus type seal impression with ten Indus signs has been found in Mesopotamia (at Umma, Scheil 1925).

3. No distinctive architectural complex of Mespotamian characteristics has ever been excavated in the Indus. The reverse being also true.

4. On no Mesopotamian site is there a clustering of Indus objects in association with architecture, save for Tell Asmar (see below).

We are left only to consider the scattered Indus-type seals in Mesopotamia—by itself weak evidence to suggest Direct Contact Trade.

Indus seals have supported the main evidence for Direct Contact Trade between the Indus and Mesopotamia, as well as for establishing contemporaneity of both civilizations during pre and post Sargonid times. It is unfortunate that the chronology is rendered doubtfnl by either unstratified or uncertain context of the majority of the seals.

A re-assessment of the context of the Indus seals in Mesopotamia in no way supports their association within a trading colony context. For the most part the seals

are single finds without clusterings of additional Indus type materials in association and, we might add, in an almost universally bad context.

The list below does not include the Persian Gulf types included by Gadd (1932).

INDUS TPYE SEALS

Ur:

1. Unstratified (Woolley 1928:26, Pl. XI, Fig. 2; Gadd 1932, No. 1).

2. From Bur-Sin's Tomb or mixed in later filling (Woolley 1932:362-64, Pl. LXII, No. 2; Gadd 1932, No. 16).

3. From a vaulted tomb of Larsa Period (Gadd 1932, No. 6; Legrain 1951:632).

The remainder of the Ur seals published by Gadd (1932) have been seen as Persian Gulf variants (Wheeler 1968).

Tell Asmar:

1. From an Akkadian house, a cylinder seal (only six cylinder seals have been found in Harappan context) depicting elephant, rhinoceros, crocodile (Frankfort 1923:51; 1938:305).

2. Akkadian context but without further association (Frankfort 1923:52).

Kish:

1. Square steatite seal with "unicorn" and the Indus signs. Found "nine meters below the surface" (Langdon 1931:593-96).

2. Square Indus seal with unicorn and Indus inscription, "below the pavement of Samsuiluna, son of Hammurabi" (Langdon 1931:593).

Umma (Tell Jokha)

1. An impressed square clay sealing with at least ten Indus signs (Scheil 1925).

The seals thus present not only doubtful chronological markers but minimal support for the presence of Indus trade in Mesopotamia. Only the Umma sealing indicates a receipt of goods received from the Indus. It is indicative, however, that such evidence as does exist, supports the presence of Indus traders in Mesopotamia rather than the reverse. Thus, if there were Direct Contact Trade it would seem to be Indus traders in Mesopotamia.

A review of the contextual association of unmistakeably Indus seals in Mesopotamia does not support the clustering of such material on any given site, nor more particularly, within a specific activity or habitation area. A single exception could be Tell Asmar where the seals are reinforced by ceramics; knobbed ware, etched beads and kidney shaped inlay of bone, all of Harappan types and found in Akkadian houses at Tell Asmar. If anywhere in Mesopotamia we have evidence for Indus Direct Contact Trade it would be best supported at Tell Asmar.

Futhermore, when the material evidence for Direct Contact Trade between the Indus and Mesopotamia is compared quantitatively against the Direct Contact Trade as it existed at the Assyrian karum of Hattush and Kultepe, Egyptian-Minoan or Egyptian-Syro-Palestinian (i.e., Byblos) it becomes evident that neither a single Mosopotamian nor Indus site indicates a comparable clustering of materials in association to suggest Direct Contact Trade between these two areas.

One cannot, however, deny the existence of materials other than Indus seals in Mesopotamia which suggest some form of relations. These objects, few in number and varied in type cannot be argued as standardized or valued trade objects (see below). Such objects may be taken as either possessions of Indus traders in Mesopotamia or having arrived through an indirect contact trade, i.e., Exchange. These materials : terracotta statues, dice, etched carnelian beads stone vessels (see below) are not found on any single Mesopotamian site in sufficient numbers and in clustering association to support the presence of trade in these items or the presence of an Indus colony. Again, we note that incontestable Mesopotamian products simply have not been found in the Indus (see below).

The presence of single objects of Indus derivation found on Mesopotamian sites may well have been brought to Mesopotamia by hand-to-hand (site-to-site) exchange. It is unfortunate that few sites of Eastern Iran and Baluchistan between the Indus and Mesopotamia have been excavated, and those that have clearly support their role in *Central Place Trade* (see below) controlling either the given resources of an area or the transshipment of goods from the East to the West, or the reverse.

EXCHANGE (INDIRECT CONTACT TRADE)

The evidence for Exchange, an informal non-centrally administered stimulus diffusion of materials, can be supported in the distribution of materials appearing as rare occurrences both in the Indus, Mesopotamia and on sites between both areas. They are not objects or materials upon which a reciprocal trade would be structured, i.e. necessary resources or desirable luxury goods. They are single and varied objects, as animal headed pins, beads, etc. not classes of distinctive functional materials as

seals. Such an Exchange, unlike Direct Contact Trade, would not be under administrative control, but the varied materials in passing from hand-to-hand (site-to-site) would appear randomly on sites between the Indus and Mesopotamia as well as on Mesopotamian and Indus sites.

One of the best explications of an exchange system in antiquity is contained in Herodotus (*The Histories*: Book IV, Chap. 33):

"But the persons who have the most to say on this subject are the Delians. They declare that certain offerings, packed in wheaten straw, were brought from the country of the Hyperboreans into Scythia, and that the Scythians received them and passed them on to their neighbors upon the West, who continued to pass them on, until at last they reached the Adriatic. From hence they were sent southward and when they came to Greece, were received first of all by the Dodoiceans. Thence they descended to the Maliac Gulf, from which they were carried across into Euboea, where the people handed them on from city to city, till they came at length to Carystus..... Such according to their own account was the road by which the offerings reached the Delians......Afterwards the Hyperboreans when they found their messengers did not return, thinking it would be a grievous thing always to be liable to lose the envoys they should send, adopted the following plan: They wrapped their offerings in the wheaten straw and bearing them to their borders, charged their neighbors to send them forward from one nation to another, which was done accordingly, and in this way the offerings reached Delos".

Objects often believed to be of Western Asian and/or Indus origin found outside either area and in the past used as evidence for Exchange include:

1. *Metal Types*

From the depth of 18.4 feet at Mohenjo-daro in DK area (MacKay 1938:539, Vol. II, Pl. C, No. 4) and from Chanhu-daro (MacKay 1943:195, Pl. LXVIII, 9) belonging to the last phase of occupation were found two spiral headed, pins, while two animal headed pins from Area J, Trench III at Harappa (Vats 1940:390, Pl. CXXV, 34, 36) and one from DK area of Mohnejo-daro (MacKay 1938: Vol II, Pl. C, 3) were recovered. Piggott (1948:26-40) has argued that these pins were imported into the Indus Valley. The presence of this generalized type at Troy II, Alaca Huyuk (Grave L), Naram Sin's palace at Brak, a mid-second millennium tomb of Mari, Hissar II, IIIc *et al* indicated to Piggott the eastward migration of this type Their presence in the Koban and Korea in 13th-9th century context make them at best a questionable chronological marker. Piggott's examples from Iran alone range from

4th to 2nd millennium date. We reject the evidence of spiral and animal headed pins as evidence for trade between East and West. Doubtful it is that they were even representative of an Exchange. We believe them best explained as the transmission of a generalized pin type. Among the many examples cited by Piggott no two examples are really alike. The pins from Alaca, the Caucasus, Mainland Greece, Luristan, Khurab, Kish, etc. are all similar in that animals form their head—the animals differ however as do their individual styles. We dismiss them as evidence of trade, but see in their popularity throughout late 3rd millennium Western Asia an indication of a common tradition in the manufacture of pins.

An unpublished bronze or copper knife of distinctly Harappan typa was found in Hissar IIIB (Wheeler 1947:80), while a copper axe-adze is noted from Mohenjo-daro (6 feet below the surface) and said to be paralleled at Hissar III. It has been argued that Indus metallurgy owes a great deal to that of Iran—but not, we believe, through trade in objects, but through stimulus diffusion in the development of a metallurgical technology and the production of similar functional tool types (Lamberg-Karlovsky 1967:145-62).

2. *Ceramics*

Ceramics are poor indicators for documenting the existence of trade relations but have been used to suggest cultural contacts between the Indus and Mesopotamia.

A few types of pottery have been thought to indicate contact between the Indus and Mesopotamia. The evidence is at best shaky—the selected attributes indicating typological similarities are too generalized, namely (a) perforated, (b) knobbed and (c) 'reserved slip' ware. Perforated wares appear on several Mesopotamian sites and in Iran at Hissar, Tureng Tepe, Shah Tepe, Yahya, Bampur and Shahr-i-Sokhta. Of different shapes and date this ware in no way can be marshalled to support the existence of Mesopotamian-Indus contact or relations.

Knobbed ware is rare in Mesopotamia, Iran and the Indus. Several sherds with knobs on the external surface at Asmar and Khafajeh are dated to Jemdet Nasr and Early Dynastic III and have been paralleled to the knobbed ware in the Indus (Delougaz 1952:188). The carefully made knobbed vases of Mohenjo-daro contrast with the roughly made knobs on those of the Diyala. The general resemblance of the plastic decoration is far too vague to establish contacts between the two areas. Rare examples of knobbed ware in Iran: Shah Tepe (Arne 1945: Fig. 167, 168, Pl. XXVII, 6); Sialk (Ghirshman 1938: Vol. I, Pl XXVIII, 6) and Yahya (Lamberg-Karlovsky 1970, Fig. 29, 0), differ in shapes as much as those from the Indus and Mesopotamia. This type of ware cannot be used to strengthen any argument for Indus-Mesopotamian

relations. Two sherds of 'reserve slip' ware were found at 31.8 feet below datum at Mohenjo-daro. MacKay (1938:184) compared these to a common 'reserve slip' pottery from Kish and Ur. The evidence of two sherds indicating similar surface treatment simply cannot be used as evidence for any type of relationship or chronological contemporaneity.

Several unique objects have been used to indicate an interrelationship between the Indus and Mesopotamia. Again, they are principally Indus objects found in Mesopotamia context and would not seem to be objects of commercial value for trade. These are figurines, dice and beads.

3. *Figurines*

Three figurines found in Mesopotamia are said to compare stylistically with ones from the Indus (Dales 1968). All three figurines come from Nippur, two were found in the 'Scribal Quarter' and one from the floor of a contemporary house (TBVZ). Although one cannot deny the stylistic affinity of these figurines with those known from Harappan context (Dales: *op cit*) the evidence from Nippur and the Indus cities does not show as intrusive character of these figurines, thus, despite few similarities in the style of representation, they could more readily be quite independent creations.

4. *Dice*

Dales (1968) has presented convincing evidence that one of the Indus die types (1/2, 3/6, 4/5) was actually exported or duplicated in Mesopotamia. In Mesopotamia, where dice are less common than in the Indus, the above type die has been found in the Royal Cemetery, Pit X at UR (woolley 1955:44, 79, Fig. 7a, b), Nippur in Akkadian context (McCown 1960, Pl. 153, 11), at Tell Asmar beneath an Akkadian floor, incompletely described, and perhaps not of Indus type (Frankfort 1933:48). One cannot be certain that the die were actually imported to Mesopotamia from the Indus: stimulus diffusion of a game-type followed by independent development of die seems as likely, and is supported by the unique die type of Gawra IV (2/3, 4/5, 6/1) (Speiser 1935:82, Pl. XXXVII) which may have been copied from a southern Mesopotamian counterpart with the retention of 4 opposite 5 (the single consistent opposition on all Mesopotamian die), but varying other oppositions.

5. *Beads*

Distinctive shapes and decorative designs of several bead types have been regarded as further evidence of connections between the Indus Valley and Mesopotamia. Beads from Chanhu-daro with single, double or triple circular designs as well

as ones with a figure of 8, afford close resemblances to those from Kish (compare MacKay 1943 Pl. LXXIX, Nos. 1-3, 8, 11, 15 with MacKay 1925 (29) Pl. X, 2, 3, p. 698). Similarly the rare segmented beads in the Indus (Wheeler 1968) have been compared to those more widely distributed in Mesopotamia between 3100 B.C.—1800 B.C. (Mallowan 1947:254, Pl. LXXXIV, 2; MacKay 1925: Pl. 60, 39, 40). The evidence of segmented beads tends to distort rather than clarify Indus-Mesopotamian interrelations. It seems unsafe to rely on a widely scattered bead type in both space and time for documenting Mesopotamian-Indus contacts.

These frustrating bits of information, despite large scale excavations in the Indus and Mesopotamia, do not provide evidence for a co-ordinated effort toward mutual contacts and/or trade. Objects such as pins, dice, statuary, etched carnelian beads, stamp and cylinder seals are not an impressive list of exchanged or traded articles. Certainly it does not seem that a single class of objects were in preferential demand in either area which resulted in objects for standardized trade. We cannot turn to a single site where there is a clustering of Indus objects in Mesopotamia, or the reverse. More often than not we have seen only one to three objects of allegedly Indus derivation in Mesopotamia, and their context does not suggest a clustering in a specific area of the excavation. Perhaps, significantly, we have noted that Indus objects are found in Mesopotamia—never the reverse. The Harappan contacts with Mesopotamia, as evidenced by the scattered evidence, suggest a casual and indirect exchange. It has been argued that this trade was in the hands of the Baluch nomads, perhaps Kulli peoples (Dales 1965). I have elsewhere argued that the Kulli people seem not to have been the exclusive middle men, i.e., merchant-ventures (Lamberg-Karlovsky 1971). Trade between the Indus and Mesopotamia is best seen through our model in Central Place Trade—evidenced at Bahrein and Tepe Yahya.

CENTRAL PLACE TRADE

Locational analysis, more specifically, Central Place Theory offers a conceptual and theoretical framework relevant to a discussion of Indus-Mesopotamian relations. Fundamental to Central Place Theory is the assumption that goods and services are produced and offered at a few necessarily central points in order to be consumed at many scattered points. These central points are Central Places, their role the dissemination of goods (transshipment), or the production of goods from a given resource which they control. We have already indicated that trade, rather than a result of urbanization may have been one of the major establishing factors in the rise of urban centers. We turn to two Central Places, both important to Mesopotamian-Indus interrelationships. One, Tepe Yahya, has an early village occupation (ca. 4500 B.C.) with direct cultural continuity toward a later fluorescence (contemporary with Mesopotamian Late Uruk sites, ca. 3300 B.C). The fluorescence at Yahya can

be attributed to its role in East-West trade and its control of a natural resource—steatite, which was exported to the West (see below). At Bahrein a contemporary fluorescence appears to have been brought about by its role in the transshipment of goods rather than control of resources.

At Tepe Yahya in Period VA (ca. 3200-3400 B C.) we have recovered Nal pottery, a ware long known to pre-date the Harappan Civilization. Period VA indicates a prosperous rural community which already makes use of local and imported resources: steatite, carnelian, turquoise, obsidian, alabaster, Persian Gulf shells, *et al.* In the immediately later Period IV C we have an increase in the architectural complexity and material wealth of the site—we believe brought about by its increasing trade relations with both East and West. In IV C we have recovered from what would appear to be an administrative building (previous architecture would appear to be entirely domestic in function) Proto-Elamite tablets, Susa C cylinder sealings, distinctive cylinder seals of a type indigenous to Yahya and Uruk bevelled rim bowls. Carved steatite bowls identical in shape and motif to those found in Mesopotamia (Kish, Tell Asmar, Mari, Khafajeh, Ur, Ubaid, etc.) and at Mohenjo-daro have been recovered. At Yahya, over 1500 steatite pieces represent both finished and incompletely manufactured objects—this together with the discovery of a steatite mine some 25 km. away strongly support the manufacture and export of steatite from Yahya. We might add that the pottery represents largely an indigenous type strongly paralleled at Bampur (de Cardi 1970), Shahr-i-Sohkta (Tosi 1970) and Iblis (Caldwell 1967) but only vaguely paralleling the painted Baluchistan pottery (Lamberg-Karlovsky 1970, 1971, 1972, for discussion).

The work and recovery of the Late 4th millennium Proto-Elamite settlement at Tepe Yahya has obvious and important implications for our understanding of the chronological and cultural reconstructions throughout this large area of Baluchistan, the Persian Gulf and Mesopotamia (Lamberg-Karlovsky 1971). Firstly, on chronology: we will be able through a series of radio-carbon dates to establish fixed dates to the Late Uruk, Proto-Elamite configuration in this area; Susa C, and indirectly for the Early Dynastic steatite parallels in Mesopotamia. Our dating will also establish the first understanding of the period of export of steatite from Yahya and Southeastern Iran to the West. The carved steatite bowl fragments in House V, Room 53 in DK area and House III, Room No. 76 at Mohenjo-daro can be precisely paralleled at Yahya (MacKay 1938. Pl. CXCII; Marshall 1931, Pl. CXXXI; Lamberg-Karlovsky 1970, Fig. 21: B, D, E, F and Pl. 23, A, F). It would appear that these pieces can now be dated to the first quarter of the 3rd millennium. This together with the presence of Nal sherds in our Period V suggests that the pre-Harappan painted pottery (Nal) dates to as early as the end of the 4th millennium while the Early Harappan surely starts either than the reasonably supposed 2500. B.C. Certainly we cannot

accept the lowering and restricting of Harappan chronology to 2300-1700 B.C. (Agrawal 1966). We would prefer to see sites as Kulli, Rana Ghundai, Mundigak, Amri, Kot Diji and the even earlier Shahr-i-Sokhta, Yahya, *et al* of the late 4th and early 3rd millennium as directly related in a causative manner to the later consolidation of the mature Harappan. The above sites being in fact where the sociopolitical processes were established and later adopted in the consolidation of the Harappan Civilization.

The presence of a "Persian Gulf" type seal in Yahya IV B supports a beginning 3rd millennium date for the beginning of the Bahrein sequence, already indicated by the presence of Jamdet Nasr sherds in the Barbar Temple (Mortensen 1970). The evidence for Bahrein as a Central Place engaged in the transshipment of goods between the Indus and Mesopotamia is evidenced from both textual and recent archaeological materials, i.e., Indus weights in the "customs house" at Bahrein, a Persian Gulf seal at Lothal (see Bibby 1969). Our strong parallels to Bampur I-IV in Period IV C indicate an end 4th millennium date for the beginning of the important Bampur sequence and a mid 3rd millennium date for its end (based on IV B parallels with the end of the Bampur sequence). Thus substantially revising the proposed chronological framework for this site (de Cardi 1970; Lamberg-Karlovsky 1970, 1971, 1972).

Secondly, we would like to point out that our site has no evidence for the presence of the Kulli Culture. Much has been made of and suggested for the Kulli "Merchant venturers" of the 3rd millennium (Dales 1965:268-74; 1969:15 ff). We find it indicative that at Tepe Yahya with obvious evidence for long range exchange patterns there is a lack of an identifiable Kulli element. Until we hear from the important work of Professor J. M. Casal at the Kulli site of Nindowari lt is best to cali a moratorium on ascribing to Kulli the responsibility for "international trade"—a conception without evident support.

Thirdly, it becomes evident that with the distribution of Tepe Yahya, Bampur, Shahr-i-Sokhta, Tal-i-Iblis and Shahdad we have an expansive distribution of contemporary and ceramically related sites. We suggest that there is here a shared cultural "ecumene" identifiable as Proto-Elamite. Clearly, the nature of the settlement pattern, the degree of uniformity between the sites, their socio-political and economic configurations (Yahya's export of steatite, Shahr-i-Sokhta's export of lapis lazuli and alabaster, etc.) need individual attention before the above hypothesis becomes wholly acceptable (Lamberg-Karlovsky 1971). It appears likely that a trade mechanism was established which in recognizing the value of local resources brought the Iranian highlands into a supply-demand relationship with resource-poor Mesopotamia. Mesopotamian demand for lapis, steatite and mineral ores would have provided in part the economic base for the urban development of Shahr-i-Sokhta,

Yahya and Iblis. This relationship as in a feedback mechanism would have in turn aided in bringing about the developing complexity of socio-political and economic structure of the Late Uruk Mesopotamian city-state.

Fourthly, the presence of a late 4th and early 3rd millennium proto-literate settlement in distant Southeastern Iran, evidencing an indigenous and centralized socio-political structure, some 300-400 years prior to the 'Early Harappan' suggests that the area of Southeastern Iran and Baluchistan may have played an important role in generating the processes which resulted in the later Harappan Civilization. Thus, we believe that at Yahya during Late Uruk and Jamdet Nasr times the natural resources which it possessed and traded both East and West contributed to its urban and concomitant socio-political development, while as in a systems feedback, a similar development took place in the resource-poor demand center of Mesopotamia. Through a similar systems mechanism we see the early development of the Harappan Culture, beginning as early as 3000 B.C. Under the stimulus of desired resources and reciprocal trade throughout Baluchistan we can see an increasing nucleation of sites (Kulli, Amri, Kot Diji, Mundigak, Shah-i-Tump, etc.) which find a culmination in the mature Harappan Civilization.

Fifthly, the role of Elam and the Elamites in Indus-Mesopotamian relations has been too long overlooked. In the 3rd millennium, situated betwyen the Indus and Mesopotamia, was the poorly known but important Elamite Civilization. Clearly, any overland routes would have had to pass through their territory, which we now know extended eastward at least to Tepe Yahya. The relations of Elam and Mesopomia have been well summarized by Hinz (1963):

"......the historian can recognise the leitmotiv of relations between Elam and Mesopotamia, one of hereditary enmity, mitigated at the same time by equally persistant economic and cultural exchanges, for Mesopotamia needed the products of the Elamite highlands, timber, metallic ore (lead, copper, tin and silver), stone (alabaster, diorite, and obsidian), semi-precious stones and also horses. The countless campaigns of the Sumerians and Akkadians against Elam were due to the need to control these important materials. At the same time they followed the political aim of warding off and keeping in check the Elamites, who were always ready to plunder lowlands".

It is entirely possible that Direct Contact Trade between the Indus and Mesopotamia, was prevented by the Elamite. It is equally possible that the development of sea trade was brought about in Mesopotamia through a necessity to bypass overland routes through hostile Elamite territory. Thus, the absence of port sites of 3rd millennium date along the Indian shores of the Persian Gulf may have also been dictated by Elamite hostility towards their establishment.

Lastly, the presence of a proto-literate site at Tepe Yahya, some 600-800 miles from the Indus Valley and 200-400 years prior to the formation of the Harappan Culture has clear implications in generating the processes which led toward not only the development of later Indus-Elamite-Mesopotamian relations, but for the very formation of the Harappan Civilization! Thus the explosive evolution traditionally argued for the Harappan Culture (Wheeler 1968) can be seen as misleading. At such sites as Yahya, Shahr-i-Sokhta, Mundigak, Amri, *et al* one can see the embryonic urban forms of social organization from which the later Harappan Culture was to evolve. Wheeler (1968) has pointed out that the "idea of civilization" crossed from West (Mesopotamia) to East (the Indus). One might well ask why civilization did not occur between. We believe this a false question; for it is evident today from such a wide distribution of proto-urban sites in eastern Iran and Baluchistan, of the late 4th and early 3rd millennium, that there was an established dialectic between these resource rich areas with resource-boor Mesopotamia on the one hand and the Indus on the other which brought about a mutually dependent parallel and contemporary process toward urbanization. The absence of a political/cultural consolidation in the area of the eastern Indian highlands and Baluchistan may be due to the absence of a unified environment, as the essentially similar riverine environments which saw the consolidation of Mesopotamian and Indus Civilizations.

In conclusion we note that the same causal factors that create a civilization often serve to identify it. Anthropologists have used the word "intensify" to signify the heightening of cultural activity which produces the complexity (Fairservis 1960:14). We have argued here that one of the important "intensifiers" motivating the parallel but essentially distinctive rise toward urban complexes in Mosopotamia and the Iranian highlands, and the later Harappan Culture was trade. As a working hypothesis it has gathered considerable support with the new excavations undertaken in Southeastern Iran, Sistan, Baluchistan and Turkmenia.

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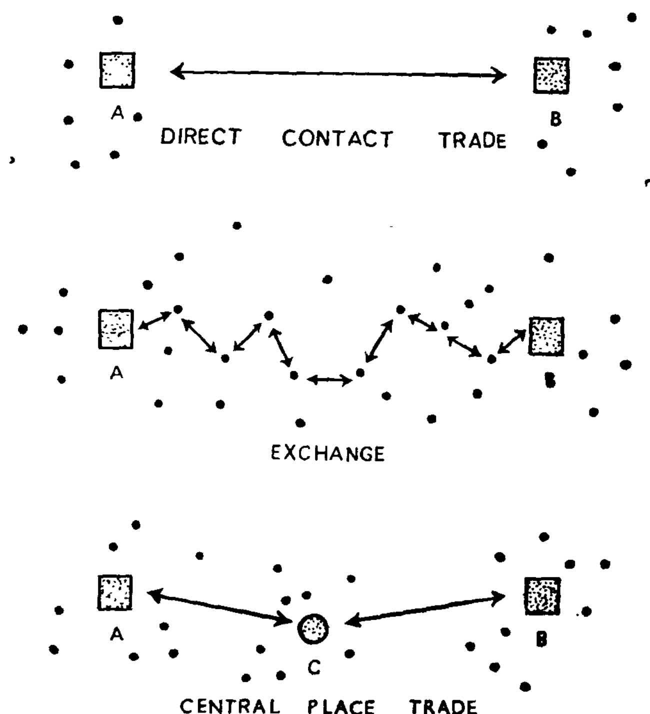
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PRESS CUTTINGS

2·5 Million-year-old Human Skull Found

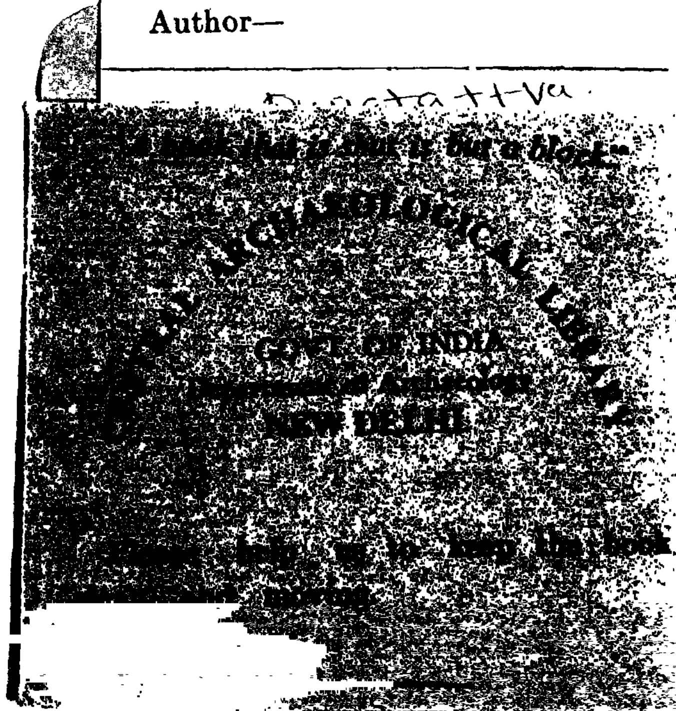
Discovery of a 2·5 million-year-old fragmented skull which is "almost certainly the oldest complete skull of early man" was announced today by a Kenya scientist, says AP. Researcher Richard Leakey, disclosing this, said the bones—estimated to be 1·5 million years older than those previously accepted as the earliest evidence of man—could upset present theory as to how and when modern man evolved from his prehistoric ancestors.

Leakey said the skull fragments, along with human leg bones from two other individuals of similar estimated antiquity, were found protruding from a stony hillside on a wind swept, scrub-covered, desert as of Lake Rudole in Kenya.

The largely unexplored region is 500 miles north of Olduvai Gorge, Tanzania, where the finds of Leakey's parents, Dr. Mary Leakey and Dr. Louis S.B. Leakey, "revolutionized the study of prehistoric man," according to the National Geographic Society. The younger Leakey, whose research is also sponsored by the society, is Administrative Director of the National Museum of Kenya. He announced the discoveries of the skull and leg bones in reports prepared for the society and for presentation to a scientific meeting in London today.

"While detailed studies on the new discoveries will take some time to conclude," he said, "preliminary comparisons with other evidence indicate that the new material will take a central place in the rethinking and re-evaluation of the evidence for the origin of homo sapien species."

(The Motherland, Delhi, 10 Nov. 1972)


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